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Supreme Court, U.S.
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Nos.

IN THE

Supreme Court of the United States

OCTOBER TERM, 1986

KANSAS GAS AND ELECTRIC COMPANY,
Appellant,
v.
STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Appellee.

KANSAS CITY POWER & LIGHT COMPANY,
Appellant,
v.
STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Appellee.

On Appeal from the Supreme Court of Kansas

APPELLANTS' APPENDIX TO JURISDICTIONAL STATEMENTS

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TABLE OF CONTENTS

	Page
Appendix A—Opinion of the Kansas Supreme Court....	1a
Appendix B—Denial of Rehearing by Kansas Supreme Court	1b
Appendix C—Order of the Kansas Corporation Commission (KG&E)	1c
Appendix D—Order Denying Rehearing (KG&E)	1d
Appendix E—Order Denying Application for Rehearing (KG&E)	1e
Appendix F—Order of the Kansas Corporation Commission (KCPL)	1f
Appendix G—Order Denying Rehearing (KCPL)	1g
Appendix H—Order Denying Application for Rehearing (KCPL)	1h
Appendix I—Notices of Appeal	1i
Appendix J—Excerpts from the Kansas Public Utility Act	1j
Appendix K—Published Article in The Wall Street Journal dated Thursday, October 2, 1986	1k

APPENDIX A

Opinion of the Kansas Supreme Court

IN THE SUPREME COURT
OF THE STATE OF KANSAS

JANUARY TERM, 1986

No. 58,914

KANSAS GAS AND ELECTRIC COMPANY,
Applicant/Appellant,

v.

STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Respondent/Appellee.

No. 58,917

KANSAS CITY POWER & LIGHT COMPANY,
Applicant/Appellant,

v.

STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Respondent/Appellee.

No. 58,918

KANSAS ELECTRIC POWER COOPERATIVE, INC.,
Applicant/Appellant,

v.

STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Respondent/Appellee.

Filed June 13, 1986

SYLLABUS BY THE COURT

1. KANSAS CORPORATION COMMISSION—*Nuclear Power Plant—Valuation of Property for Rate-making Purposes—KCC Determination.* The record is examined in three consolidated appeals from orders of the Kansas Corporation Commission determining the valuation of the Wolf Creek nuclear generating facility for rate-making purposes and it is held that the KCC did not err in excluding from the rate base (1) certain costs of construction found to have been imprudently incurred, (2) certain costs found to constitute excess physical capacity, and (3) certain costs found to constitute excess economic capacity.
2. SAME—*Electrical Utilities—Rates—KCC Determination.* The Kansas Corporation Commission, in setting the rates for an electrical utility, should have as its goal the fixing of the rates, within a zone of reasonableness after balancing the interests of the utility's investors, the ratepayers, and the public.
3. SAME—*Public Utilities—Rates—No Constitutional Requirement that Rates Be Set at Level that Will Guarantee Return on Capital Investment.* There is no constitutional requirement that a utility's rates be set by a regulatory authority at a sufficiently high level to guarantee a return on its capital investments, irrespective of the interests of the ratepayers and the public.
4. SAME—*Nuclear Power Plant—Statutory Authority of KCC to Set Rates.* The Kansas statutes which give the power and authority to the Kansas Corporation Commission to fix the rates for a public utility (K.S.A. 66-101 *et seq.*) are analyzed and discussed in relation to the Wolf Creek nuclear generating facility.

5. PUBLIC UTILITIES—*Statutory Authority for KCC Determination of Valuation of Property for Rate-making Purposes—Constitutionality of Statutes.* K.S.A. 66-128 *et seq.*, are not unconstitutional because of vagueness or as an unlawful delegation of legislative authority.

6. KANSAS CORPORATION COMMISSION—*Public Utilities—Valuation of Property for Rate-making Purposes—KCC Determination.* The Kansas Corporation Commission is not bound to use any particular formula, or combination of formulae, in valuing a public utility's property for rate-making purposes. Any evidence having a bearing on reasonable value may be considered, and the KCC may then use any formula or combination of formulae that it may believe necessary for arriving at a reasonable basis for rate-making purposes.

7. PUBLIC UTILITIES—*Electric Generating Property —Construction Costs—Rebuttable Presumption as to Lack of Prudence by Utility's Incurring Cost Overruns.* K.S.A. 66-128g(b), which creates a rebuttable presumption that construction costs of a generating plant or facility have been incurred due to a lack of prudence as to that portion of the total costs which exceed 200% of the original cost estimate, is not unconstitutional as a violation of due process of law.

8. KANSAS CORPORATION COMMISSION—*Nuclear Power Plant—Construction Cost Disallowance Due to Excess Economic Capacity—Balancing of Interests.* In determining that a portion of the construction costs of the Wolf Creek nuclear generating facility should be disallowed because it constituted excess economic capacity, the Kansas Corporation Commission did not err in using a risk-sharing approach in balancing the interests of the investors and the ratepayers.

9. SAME—*Nuclear Power Plant—KCC Rate Base Determination Does Not Encroach on Federal NRA Safety Requirements.* The determination of the rate base for revenue purposes by a state regulatory agency does not encroach on the power of the federal Nuclear Regulatory Agency to establish and regulate the safety requirements of nuclear generating plants.

Review of decisions of Kansas Corporation Commission. Opinion filed June 13, 1986. Affirmed.

James Haines and *Jonathan L. Heller*, of Wichita, and *Edgar M. Roach, Jr.*, of Hunton & Williams, of Raleigh, North Carolina, argued the cause, and *Ralph Foster*, of Wichita, *Richard D. Gray* and *Laurence E. Skinner*, of Hunton & Williams, of Richmond, Virginia, and *Thomas E. Graham*, of the same firm, of Raleigh, North Carolina, were with them on the briefs for appellant Kansas Gas and Electric Company.

Lowell L. Smithson, of Spencer, Fane, Britt & Browne, of Kansas City, Missouri, argued the cause, and *Russell W. Baker, Jr.* and *Curtis E. Woods*, of the same firm, *Charles S. Schnider*, of the same firm, of Overland Park, and *Warren B. Wood*, of Overland Park, were with him on the briefs for appellant Kansas City Power and Light Company.

Clifford L. Bertholf and *John Philip Kassebaum*, of Kassenbaum & Johnson, of Wichita, argued the cause and were on the briefs for appellant Kansas Electric Power Cooperative, Inc.

Brian J. Moline, general counsel, and *Donald A. Low*, director of utilities, argued the cause, and *LuAnn C. Dixon, John Ray Rosacker, Robert L. Bezek, Jr.*, and *Richard Hird*, assistants general counsel, were with them on the brief for appellee Kansas Corporation Commission.

Patrick H. Donahue, of Kansas Legal Services, Inc., of Topeka, argued the cause, and *William G. Riggins*, of the

same organization, was with him on the brief for intervenor Mary Margaret Rogers.

Robert T. Stephan, attorney general, and *Carl M. Anderson*, assistant attorney general, were on the brief for intervenor Office of the Attorney General.

Robert Vinson Eye, of Irigonegaray, Eye & Florez, of Topeka, was on the brief for intervenor Alliance for Liveable Electric Rates (ALERT).

Dwight A. Corrin, of Corrin & Krysl, Chartered, of Wichita, was on the brief for intervenor Electric Shock Coalition.

John Dekker, city attorney, and *Joe Allen Lang*, assistant city attorney, were on the brief for intervenor City of Wichita and Cities of Cheney, Clearwater, Derby, Garden Plain, Goddard, Kechi, Potwin and Whitewater.

C. Edward Peterson, of Perry & Hamill, of Overland Park, was on the brief for intervenor Johnson County Joint Intervenor Group.

OPINION

The opinion of the court was delivered by

PRAGER, J.: This is a consolidation of three appeals by three electrical utilities from orders of the State Corporation Commission (KCC) granting in part and denying in part the requests of the utilities for rate increases due to the commercial operations of the Wolf Creek Generating Station (Wolf Creek) near Burlington, Kansas. The three utilities are Kansas Gas and Electric Company (KGE), Kansas City Power and Light Company (KCPL), and Kansas Electric Power Cooperative, Inc. (KEPCo). The KCC is the appellee. There are also a number of intervenors, including the Kansas Attorney General and various individuals and organizations representing interested citizens and the public.

Historical Background

The legal issues presented in this case are not peculiar to Kansas but are the natural result of the national controversy over the construction of nuclear power plants which has developed over the past thirty years. On December 8, 1953, in his address to the United Nations, President Dwight D. Eisenhower announced his "Atoms for Peace" program. Among other subjects, he spoke of using the atom "to serve the peaceful pursuits of mankind." He spoke of providing abundant electrical energy in the power-starved areas of the world and envisioned the cooperation of the nations of the world to serve the needs rather than the fears of mankind. The possibility that nuclear energy could be used to improve rather than to destroy the world excited most Americans. Today, three decades later, the future of nuclear power is uncertain and the national debate has not been resolved.

In 1953, the Atomic Energy Commission, an agency created by Congress to supervise atomic energy and its development, allocated funds for a demonstration nuclear plant at Shippingport, Pennsylvania. The reactor used in that plant was very small and, by modern standards, its output of electricity was very modest. During the 1960s, several private companies developed nuclear reactors and marketed them to utilities at prices competitive with conventional generators. Between 1965 and 1975, the nuclear industry was perhaps the fastest growing major industry in the United States.

During the 1960s, KGE used natural gas to generate its electricity. Some time during the late 1960s, KGE was notified by its natural gas supplier that the utility's access to natural gas eventually would end. At that time, KGE was experiencing a growth in demand for electricity of approximately seven percent per year. KCPL, an electrical utility in northeast Kansas, was experiencing the same growth in demand. Both utilities, like many others around the country, faced the decision of whether

to generate electricity from coal or from natural gas or from nuclear power. Studies were commissioned which suggested that nuclear power rather than coal or natural gas was the most cost efficient and environmentally sound alternative for expansion of electrical capacity. As a result, KGE and KCPL, and later KEPCo, decided to take the nuclear route. KGE and KCPL each took 47% shares in the project, and KEPCo took a 6% share.

In January of 1977, the Nuclear Regulatory Commission (NRC), the successor to the Atomic Energy Commission, issued a temporary work authorization permit for the construction of a nuclear facility on Wolf Creek in Coffey County. In May of 1977, major construction work began. It was estimated in February of 1973 that the cost of constructing the nuclear plant at Wolf Creek would be in the neighborhood of $525,000,000. The ultimate cost of construction amounted to about $3,000,000,000, almost a six-fold increase.

It is clear that three unforeseen events occurred during the mid-1970s which affected the relative attractiveness of the nuclear option and brought about a tremendous increase in the cost of construction. After several nuclear power plants were constructed, a series of accidents occurred which intensified the debate over the use of nuclear energy. At the Three Mile Island accident in March 1979, a mechanical malfunction, compounded with human errors, brought the Three Mile Island nuclear reactor close to a meltdown. This required the utilities to increase their efforts to improve plant safety. New safety equipment, which the NRC required, added millions of dollars to the costs of nuclear plant construction at Wolf Creek and elsewhere.

Another important factor was the change in "energy economics" that occurred during the 1970s. When OPEC in 1973-74 raised the price of oil, making nuclear power even more attractive, orders for nuclear reactors increased. A second oil shock occurred in 1979 when, fol-

lowing the overthrow of the Shah of Iran, the price of oil reached $40 per barrel. The American people responded to the oil crisis and an unexpected and dramatic decline in the demand for oil followed. The demand for energy also diminished. Electrical utilities, which had already implemented plans to substantially increase their supply of electricity, now discovered that the supply greatly exceeded the demand for electricity. Some utilities responded to this new economic environment by canceling plans for additional generating facilities including scheduled nuclear plants, some of which were then under construction.

A third unforeseen development which the utilities faced in the construction of nuclear plants was the increased inflation of the 1970s, the effect of which was to increase substantially the cost of building a nuclear plant. By adding millions to interest costs, cost overruns strained the cash flow positions of some utilities and thus impeded the ability of some utilities to raise capital to complete these projects. All of these unforeseen changes affected the Wolf Creek project. The project was delayed both by the post-Three Mile Island safety standards and construction problems which developed at the site. Although the original plans called for the Wolf Creek plant to start producing electricity in April 1981, production did not commence until September 1985. There is an excellent discussion of this historical background in an article by Professor Robert H. Jerry, II, entitled *Introduction to Wolf Creek Symposium*, 33 Kan. L. Rev. 419 (1985).

As the time for commencement of operations at the Wolf Creek plant approached, the three utilities involved in this case filed petitions with the KCC requesting the granting of appropriate electrical rates for the electricity to be produced. At this same time, regulatory agencies in other states were faced with the same or similar problems. In some states, state regulatory agencies had

to determine whether the costs of an abandoned nuclear plant should be included in an electrical utility's rate base. Where a nuclear plant had been completed and placed in operation, the state regulatory agency had the problem of determining whether the inflated construction costs of a nuclear facility had to be included in the rate base in a manner which would financially hurt the ratepayers, the consumers, and the general public. It is this same basic problem which was faced by the KCC in the case now before us.

Constitutional and Legal Principles Applicable in Rate-making Decisions

Before turning to the specific issues raised in this case, it would be helpful to discuss some of the general constitutional and legal principles applicable to rate-making decisions by state regulatory agencies. An important question to be considered is what a regulatory agency should seek to accomplish in such a case. The leading cases in this area clearly indicate that the goal should be a rate fixed within the "zone of reasonableness" after the application of a balancing test in which the interests of all concerned parties are considered. In rate-making cases, the parties whose interests must be considered and balanced are these:

(1) The utility's investors vs. the ratepayers;

(2) the present ratepayers vs. the future ratepayers; and

(3) the public interest.

The leading case in this area which has been followed by various state regulatory agencies is *Power Comm'n v. Hope Gas Co.*, 320 U.S. 591, 88 L. Ed. 333, 64 S. Ct. 281 (1944). The issue presented in *Hope* was whether there was a requirement of constitutional dimension that utility rates set by regulatory authorities be set at sufficiently high levels to *guarantee*, irrespective of counter-

vailing consumer interests, the continued financial integrity of the utilities concerned. Stated in another way, is a public utility entitled in every case to a reasonable return on its capital investments as a matter of law without regard to the interests of the ratepayers and consumers? In *Hope*, the United States Supreme Court addressed the considerations to be taken into account by the Federal Power Commission in setting "just and reasonable" rates for natural gas companies, as required by § 4(a) of the Natural Gas Act of 1938, 15 U.S.C. § 717 (1982). In applying the standard requiring "just and reasonable" rates, the *Hope* court emphasized that the focus of inquiry is properly upon the end result or "total effect" of the rate order, rather than upon the rate-setting methods employed. The court described the rate-setting process as a balancing process involving the weighing of certain enumerated interests of the consumer and of the investor. The court stated that the rate-making process involves a balancing of the investor and the consumer interests, and that public utility regulation does not insure that the business shall produce net revenues.

The decision in *Hope* was followed by *Permian Basin Area Rates Cases*, 390 U.S. 747, 770, 20 L. Ed. 2d 312, 88 S. Ct. 1344, *reh. denied* 392 U.S. 917 (1968), which held that the "just and reasonable" standard of the Natural Gas Act coincides with the applicable constitutional standards and any rate selected by a regulatory commission within the "broad zone of reasonableness" cannot properly be attacked as confiscatory.

There is an excellent discussion of these cases in *Pennsylvania Elec. v. Pennsylvania Pub. Util.*, —— Pa. ——, 502 A.2d 130 (1985), where the Supreme Court of Pennsylvania had before it an appeal in an electrical utility rate case involving a nuclear generating plant which had been so severely damaged as to render it no longer useful in the public service. The question was whether

the costs associated with the damaged nuclear plant should be removed from the rate base of the utilities. The court concluded that the Pennsylvania commission was not precluded from eliminating from the utility's rate base all costs associated with the unit of the nuclear power plant involved in a near meltdown or in determining that another unit which had previously been shut down for refueling and which remained shut down by order of NRC likewise was no longer useful in public service because its return to service was not imminent or certain. The court held that the decisions of the United States Supreme Court in *Hope* and *Permian Basin Area Rate Cases* did not establish, as a constitutional requirement, that the end result of a rate-making body's adjudication must be the setting of rates at a level that will, in any given case, guarantee the continued financial integrity of the utility. Rather, *Hope* requires only that the regulatory authority balance competing consumer and investor interests to determine just and reasonable rates providing a return on used and useful property.

The Pennsylvania Supreme Court noted *In re: Jersey Central Power & Light Co.*, No. A-162-81T2 (July 28, 1983), *cert. den.* 95 N.J. 217, 470 A.2d 433 (1983), which involved similar facts and where a similar result was reached. An appeal was taken to the United States Supreme Court which was subsequently dismissed for want of a substantial federal question. *Jersey Central Power & Light Co. v. Board of Public Utilities of New Jersey*, 466 U.S. 947, 80 L. Ed. 2d 533, 104 S. Ct. 2146 (1984).

This balancing concept is supported by other federal court decisions. In *Smyth v. Ames*, 169 U.S. 466, 544, 42 L. Ed. 819, 18 S. Ct. 418 (1898), the Supreme Court stated that it cannot be admitted that a railroad corporation maintaining a railroad under the authority of the state may fix its rates with a view solely to its own interests, and ignore the rights of the public. *Washing-*

ton Gas Light Co. v. Baker, 188 F.2d 11, 19 (D.C. Cir. 1950), holds that the valuation included in the rate base must meet the test of justness and reasonableness to the consumer as well as to the investor. In *FPC v. Memphis Light, Gas & Water Div.*, 411 U.S. 458, 474, 36 L. Ed. 2d 426, 93 S. Ct. 1723 (1973), the Supreme Court expressly recognized that rates cannot be determined just and reasonable unless consumer interests are protected. In addition, a number of state courts have held that utility rates must not be set so high as to constitute an unreasonable burden on the ratepayers. *State, Ex. Rel. Allain v. Miss. Public Serv. Com'n*, 435 So. 2d 608, 624 (Miss. 1983); *New England Tel. & Tel. Co. v. Public Utilities*, 390 A.2d 8, 30 (Me. 1978); *Central Me. Power Co. v. P. U. C.*, 150 Me. 257, 278, 109 A.2d 512 (1954).

The Supreme Court of Kansas has likewise recognized and applied the "zone of reasonableness" concept in *Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, 386 P.2d 515 (1963). Syllabus ¶ 17 states as follows:

> "There is an elusive range of reasonableness in calculating a fair rate of return. A court can only concern itself with the question as to whether a rate is so unreasonably low or so unreasonably high as to be unlawful. The in-between point, where the rate is most fair to the utility and its customers, is a matter for the State Corporation Commission's determination."

At page 58 of the opinion, the court recognizes the decision of the United States Supreme Court handed down in *Power Comm'n v. Hope Gas Co.*, 320 U.S. 591, which is discussed heretofore. See also *Midwest Gas Users Ass'n v. Kansas Corporation Commission*, 5 Kan. App. 2d 653, 659, 623 P.2d 924, *rev. denied* 229 Kan. 670 (1981). All of these cases clearly support the general principle that a state regulatory agency, in setting a rate for a public utility, must have as its goal a rate fixed within

the "zone of reasonableness" after an application of a balancing test in which the interests of all concerned parties are considered.

Kansas Statutory Provisions Applicable to Rate-making Cases

Under the constitutional separation of powers doctrine, the regulation of public utilities is legislative in nature. The legislature created the Kansas Corporation Commission and granted it full and exclusive authority and jurisdiction to supervise, control, and regulate the public utilities of this state and, when acting in the exercise of its delegated powers, the Commission is not a quasi-judicial body. *Cities Service Gas Co. v. State Corporation Commission*, 201 Kan. 223, 440 P.2d 660 (1968); *Midwest Gas Users Ass'n v. Kansas Corporation Commission*, 5 Kan. App. 2d 653.

Thus, public utility rate making is a legislative function, whether it is regulated by an administrative body or by the legislature itself. Prior to 1984, the legislature empowered the KCC by broad, non-specific statutes to exercise the rate-making function. By K.S.A. 66-101, the State Corporation Commission was given the authority to supervise and control public utilities and was empowered to do all things necessary and convenient for the exercise of such authority. K.S.A. 66-141 (Weeks), now K.S.A. 66-101g, provided that the statutory provisions granting authority, power, and jurisdiction to the Commission shall be liberally construed. K.S.A. 66-107 (Weeks), now K.S.A. 66-101b, provided the KCC with authority to require a public utility to furnish reasonably efficient and sufficient service and to establish "just and reasonable" rates.

During the 1984 legislative session, the Kansas legislature was faced with the controversy over the Wolf Creek power plant. With estimates predicting that electric power bills would increase from 40% to 110% when the

plant became operational, the demand from consumer groups, the media, and even large business users to "do something" about Wolf Creek had created a political imperative. The result was the passage of House Bill 2927, codified as K.S.A. 66-128 through 66-128k, which substantially broadened and made more specific the statutory authority of the Commission in rate-making cases to address such issues as excess capacity, management inefficiency, and imprudence in the acquisition, construction, or operation of a generating plant. For an excellent discussion of the 1984 legislation see the article by Robert Vancrum, entitled *The Wolf Creek Excess Cost—Excess Capacity Bill*, 33 Kan. L. Rev. 475 (1985).

K.S.A. 66-128 authorizes the KCC to determine the reasonable value of "all or whatever fraction or percentage of the property" of any public utility which is used and required to be used in its services to the public within the State of Kansas whenever the Commission deems the ascertainment of such value necessary in order to enable the Commission to fix fair and reasonable rates. K.S.A. 66-128a provides that nothing in K.S.A. 66-128b through 66-128i shall be construed to limit the authority of the KCC to review and evaluate the efficiency or prudence of any actions, including acquisition of excess capacity, or operating practices of any public utility for the purpose of establishing fair and reasonable rates. K.S.A. 66-128b provides that the KCC may require a public utility to defer the inclusion of all or any portion of the reasonable value of property determined not currently used and required to be used for public service and may require the phase-in of such value over any period of time and in such increments as it may determine to be appropriate.

K.S.A. 66-128c provides that the KCC, in determining the reasonable value of property under 66-128, shall have the power to evaluate the efficiency *or* prudence of acquisition, construction, or operating practices of that

utility. In the event the KCC determines that a portion of the costs of acquisition, construction, or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, the Commission shall have the power and authority to exclude those portions of the costs from the revenue requested by the utility. This section defines "excess capacity" to mean any capacity in excess of the amount used and required to be used to provide adequate and reliable service to the public within the State of Kansas as determined by the Commission. The Commission is empowered, within its discretion, to prohibit or reduce the return on all costs which were incurred in constructing, maintaining or operating excess capacity.

K.S.A. 66-128e authorizes the KCC to exclude from the value of utility property for rate-making purposes that portion of the costs attributable either to investment in excess capacity which was incurred due to lack of prudence in facility planning or lack of prudence in plant acquisition, construction, or operation. However, a finding of lack of prudence in capacity planning for a facility which in whole or in part represents excess capacity shall not be made by the KCC when a siting permit authorizing the construction of the facility has been issued under K.S.A. 66-1,162. It should be noted that, in the present case, there was no siting permit issued for the construction of Wolf Creek.

K.S.A. 66-128g is devoted to a recitation of the various factors to be considered by the Commission in making the determination of "prudence" or lack thereof in determining the reasonable value of electric generating property. K.S.A. 66-128g provides as follows:

> "66-128g. . . . (a) The factors which shall be considered by the commission in making the determination of 'prudence' or lack thereof in determining

the reasonable value of electric generating property, as contemplated by this act shall include without limitation the following:

"(1) A comparison of the existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that facility;

"(2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;

"(3) a comparison of the final cost of the facility under consideration to the final cost of other facilities constructed within a reasonable time before or after construction of the facility under consideration;

"(4) a comparison of the original cost estimates made by the owners of the facility under consideration with the final cost of such facility;

"(5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

"(6) a comparison of any overruns in the construction cost of the facility under consideration with any cost overruns of any other electric generating facility constructed within a reasonable time before or after construction of the facility under consideration;

"(7) whether the utility having an ownership interest in the facility being considered has provided a method to ensure that the cost of any decommis-

sioning, any waste disposal or any cost of clean-up of any incident in construction or operation of such facility is to be paid by the utility;

"(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

"(9) whether inclusion of all or any part of the cost of construction of the facility under consideration, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

"(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

"(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest to Kansas;

"(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

"(b) The portion of the cost of a plant or facility which exceeds 200% of the 'original cost estimate' thereof shall be presumed to have been incurred due to a lack of prudence. The commission may include any or all of the portion of cost in excess of 200% of the 'original cost estimate' if the commission finds by a preponderance of the evidence that such costs were prudently incurred. As used in this act 'original cost estimate' means:

"(1) For property of an electric utility which has been constructed without obtaining an advance permit under K.S.A. 60-1,159 *et seq.*, and amendments thereto, the 'definitive estimate'; and

"(2) for property of an electric utility which has been constructed after obtaining an advance permit

> under K.S.A. 66-1,159 *et seq.*, and amendments thereto, the cost estimate made by the utility in the process of obtaining the advance permit."

The other provisions enacted in 1984 are not material in this case and need not be mentioned.

In 1985, the legislature adopted additional statutory amendments to clarify the Commission's authority, power, and jurisdiction to supervise and control public utilities. See K.S.A. 66-101 through 66-101h. These various statutes grant to the KCC broad authority to do all things necessary and convenient for the establishment of just and reasonable rates in order to maintain reasonably sufficient and efficient service from electric public utilities. The Commission is given powers to investigate and to hold hearings. K.S.A. 66-101g declares that the statutory powers shall be liberally construed, and all incidental powers necessary to carry into effect the provisions of the act are expressly granted to and conferred upon the Commission. It should be noted that all of these statutory amendments passed in 1984 and 1985 were in full force and effect at the time the KCC orders were entered in the three cases now before us on this appeal.

In their briefs, the utilities challenge the constitutionality of these statutes for a variety of reasons. They argue that K.S.A. 66-128 *et seq.* are unconstitutionally vague because an ordinary person exercising ordinary common sense could not understand their provisions. We find no merit to this contention. The thrust of the KCPL argument claiming vagueness is that "prudence" is not defined anywhere in the statutes. In our judgment, the statutory provisions are as definite and clear as reasonably could be expected in a statute of this type. The Kansas statutory provisions are much more definite and certain than statutes involving the same subject matter found in other jurisdictions. We also note that K.S.A. 66-128g(12), in effect, states that "prudence or lack thereof" means as that term is commonly used. Black's

Law Dictionary 1104 (5th ed. 1979) defines "prudence" as "[c]arefulness, precaution, attentiveness and good judgment."

The utilities also attack K.S.A. 66-128 *et seq.* as an unlawful delegation of legislative authority because the statutory provisions do not contain reasonably clear standards to control the KCC in the exercise of its authority. It is well established in Kansas that a delegation of legislative authority to an administrative body must fix a reasonably clear standard which governs the exercise of that authority. *State, ex rel., v. Fadely*, 180 Kan. 652, 308 P.2d 537 (1957); *State, ex rel., v. Hines*, 163 Kan. 300, 182 P.2d 865 (1947).

In this case, the statutes enacted in 1984 and 1985 authorize the Commission to apply certain prescribed standards and requirements in setting the rates for the various utilities. The KCC's expertise in the field is vast, and the Commission must, of necessity, have considerable discretion in order to regulate utilities in the public interest. The statutes also contain a protection against arbitrary action by the KCC. The KCC is required to state expressly its findings of fact and conclusions of law. Such a provision prevents arbitrary action and facilitates judicial review, thus insuring a lawful exercise of legislative authority.

One other matter should be noted in regard to the determination of rate-making cases. In arriving at its decision, the KCC, of necessity, must be afforded a wide discretion in the methodology to be utilized in approaching the complex problems involved. The field of public utility regulation is a highly complex field and requires a great amount of expertise in arriving at a result which is fair and just to all interested parties.

In *Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, Syl. ¶ 3, we find the following language:

> "A public utility has no vested right in any one particular formula or method, and the State Corporation Commission is not bound to use any particular formula, or combination of formulae, in valuing a public utility's property for rate making purposes. The State Corporation Commission should receive and consider all evidence which has a relevant bearing on reasonable value and then determine what formula, or combination of formulae, it believes should be used under the facts and circumstances of the case to arrive at a reasonable value of the property for rate making purposes."

See also *Central Kansas Power Co. v. State Corporation Commission*, 221 Kan. 505, 512, 561 P.2d 779 (1977).

Scope of Review

We should next consider the scope of judicial review where an appeal is taken to the courts from an order of the KCC in a rate-making case. The scope of review is discussed in the decision of the Court of Appeals in *Midwest Gas Users Ass'n v. Kansas Corporation Commission*, 3 Kan. App. 2d 376, 380-81, 595 P.2d 735, *rev. denied* 226 Kan. 792 (1979), where the court stated:

> "K.S.A. 1978 Supp. 66-118d limits judicial review of an order by the commission to determining whether the order is 'lawful' or 'reasonable,' *Kansas Gas & Electric Co. v .State Corporation Commission*, 218 Kan. 670, Syl. ¶ 1, 544 P.2d 1396 (1976). A court has no power to set aside such an order unless it finds that the commission acted unlawfully or unreasonably. *Jones v. Kansas Gas and Electric Co.*, 222 Kan. 390, 396-7, 565 P.2d 597 (1977). An order is 'lawful' if it is within the statutory authority of the commission, and if the prescribed statutory and procedural rules are followed in making the order. *Central Kansas Power Co. v. State Corporation Commission*, 221 Kan. 505, Syl. ¶ 1, 561 P.2d 779 (1977).

An order is generally considered 'reasonable' if it is based on substantial competent evidence. *Jones v. Kansas Gas and Electric Co.*, 222 Kan. 390, Syl ¶ 2.

"The legislature has vested the commission with wide discretion and its findings have a presumption of validity on review. *Central Kansas Power Co. v. State Corporation Commission*, 221 Kan. at 511. Since discretionary authority has been delegated to the commission, not to the courts, the power of review does not give the courts authority to substitute their judgment for that of the commission. *Central Kansas Power Co. v. State Corporation Commission*, 206 Kan. 670, 675, 482 P.2d 1 (1971). The commission's decisions involve the difficult problems of policy, accounting, economics and other special knowledge that go into fixing utility rates. It is aided by a staff of assistants with experience as statisticians, accountants and engineers, while courts have no comparable facilities for making the necessary determinations. *Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, 48-9, 386 P.2d 515 (1963). Hence a court may not set aside an order of the commission merely on the ground that it would have arrived at a different conclusion had it been the trier of fact. It is only when the commission's determination is so wide of the mark as to be outside the realm of fair debate that the court may nullify it. *Kansas-Nebraska Natural Gas Co. v. State Corporation Commission*, 217 Kan. 604, 617, 538 P.2d 702 (1975); *Graves Truck Line, Inc. v. State Corporation Commission*, 215 Kan. 565, Syl. ¶ 5, 527 P.2d 1065 (1974)."

These same rules were recognized in *Ash Grove Cement Co. v. Kansas Corporation Commission*, 8 Kan. App. 2d 128, 650 P.2d 747 (1982), and also by this court in *Oilfield Fluid Motor Carriers v. Kansas Corporation Comm'n*, 234 Kan. 983, 986, 677 P.2d 982 (1984).

In 1984, the Kansas legislature codified these principles when it enacted the "Act for Judicial Review and Civil Enforcement of Agency Action" contained in K.S.A. 77-601 through 77-627. K.S.A. 77-603 makes the act applicable to all agencies not specifically exempted by statute. K.S.A. 77-621 specifically sets forth the scope of review of administrative decisions by the courts and provides as follows:

> "77-621. Scope of review. (a) Except to the extent that this act or another statute provides otherwise:
>
> "(1) The burden of proving the invalidity of agency action is on the party asserting invalidity; and
>
> "(2) the validity of agency action shall be determined in accordance with the standards of judicial review provided in this section, as applied to the agency action at the time it was taken.
>
> "(b) The court shall make a separate and distinct ruling on each material issue on which the court's decision is based.
>
> "(c) The court shall grant relief only if it determines any one or more of the following:
>
> "(1) The agency action, or the statute or rule and regulation on which the agency action is based, is unconstitutional on its face or as applied;
>
> "(2) the agency has acted beyond the jurisdiction conferred by any provision of law;
>
> "(3) the agency has not decided an issue requiring resolution;
>
> "(4) the agency has erroneously interpreted or applied the law;
>
> "(5) the agency has engaged in an unlawful procedure or has failed to follow prescribed procedure;

"(6) the persons taking the agency action were improperly constituted as a decision-making body or subject to disqualification;

"(7) the agency action is based on a determination of fact, made or implied by the agency, that is not supported by evidence that is substantial when viewed in light of the record as a whole, which includes the agency record for judicial review, supplemented by any additional evidence received by the court under this act; or

"(8) the agency action is otherwise unreasonable, arbitrary or capricious.

"(d) In making the foregoing determinations, due account shall be taken by the court of the rule of harmless error."

K.S.A. 66-118a provides that the Court of Appeals shall have exclusive jurisdiction of proceedings for review of an order or decision of the State Corporation Commission arising from a rate hearing when a public utility is a necessary party. Here, the consolidated appeal was transferred from the Court of Appeals to the Supreme Court under the authority of K.S.A. 20-3018(c) and K.S.A. 20-3017.

Proceedings before the KCC

In 1979, when the problem of rapidly increasing construction costs of Wolf Creek became evident, a docket was created by the KCC for the purpose of initiating a general investigation of the projected costs so that data could be collected for use in rate cases which would be filed after the Wolf Creek facility was completed. In November of 1984, each of the three utilities filed an application requesting proposed rate increases to become effective at the time the Wolf Creek plant went into operation.

The magnitude of the rate increases sought was unprecedented in Kansas. KCPL suggested a phase-in of the increased rates over a four-year period. The first-year increase requested was in the amount of $45.3 million, a 25% increase. Over the phase-in period, a total increase of $110.6 million was sought for a 65% increase over current rates. KGE proposed a phase-in proposal seeking a 40% increase in the amount of $144.9 million in 1985 and four subsequent annual increases for a total of $373 million. The percentage increase in rates at the end of the phase-in period for KGE would be 106%, as opposed to a one-time 95% increase. KEPCo sought a 40% increase in its rates in the amount of $26.9 million annually.

In requesting the proposed rate increases, the utilities sought to recover their shares of various expenses for Wolf Creek, including operations and maintenance, fuel, and annual funding for decommissioning of the plant. Furthermore, the companies sought a return on the total construction costs of the Wolf Creek plant through annual depreciation expenses and, in addition, a return on the costs of construction at an overall rate of return.

The KCC held hearings on the applications for rate increases during the months of May, June, and July of 1985. The Commission heard the testimony of over 160 technical witnesses and admitted several hundred exhibits. The 58-volume transcript covers 17,830 pages. The Commission held 19 public hearings at various places in the companies' service territories, hearing the testimony of 475 ratepayers. Briefs were then submitted to the KCC by counsel for the utilities, the Commission staff, and various intervenors. On September 27, 1985, the KCC issued its order granting in part and denying in part the rate increases requested by the utilities. Motions for a rehearing were filed and heard. The original orders of the KCC were modified in certain respects and the balance of the motions were denied in November

1985. The utilities sought judicial review of the orders of the KCC in the Court of Appeals. The cases were subsequently transferred to the Kansas Supreme Court and consolidated into one appeal.

The overall effect of the KCC orders may be summarized as follows:

(1) The utilities received virtually all they requested as expenses to operate and maintain the plant and to decommission it at the end of its life.

(2) The KCC determined that a total of $183 million, or about 10% of the costs of construction of the Wolf Creek plant, was inefficiently and imprudently incurred. The utilities were denied both a recovery *of* and a return *on* that portion of the costs of the construction.

(3) The KCC allowed all of the remaining 90% of the Wolf Creek construction costs to be recovered through annual depreciation expenses over the expected life of the plant.

(4) Of that 90%, no current return or profit was permitted on approximately $944 million on the basis that a portion of the costs constituted excess physical capacity, because it was not used and required to be used to provide current services to the ratepayers. The disallowance for the excess physical capacity was allocated in the amount of approximately $716 million to the rate base of KGE and $228 million to the rate base of KCPL. As to KEPCo, the KCC found that it did not have excess physical capacity and, therefore, no deduction from its rate base was required. The excluded amounts will remain eligible in the future for a rate of return as the excess capacity is utilized to serve the ratepayers.

(5) Of the remaining 90% of capital costs which were held to be prudently incurred, the KCC disallowed the sum of approximately $266 million on the basis that it constituted excess economic capacity. The disallow-

ance for excess economic capacity was allocated to reduce the rate base of KGE approximately $193 million and to reduce the rate base of KCPL approximately $73 million. No deduction was made for this factor from the rate base of KEPCo. The capital costs on which a return was disallowed were subject to increases in the future, if the economic value increases in comparison with other plants. Thus, the amounts excluded at the time of the order will remain eligible in the future for a rate of return to each utility.

(6) Although, as noted above, no return was allowed on those construction costs found to be imprudent or for the costs found to be excess physical capacity and excess economic capacity, the KGE and KCPL carrying costs will be recovered by being amortized over the life of the plant on a straight-line basis.

Stated simply, the utilities were not and will not be permitted to recover the 10% of the construction costs found to be imprudently incurred. The utilities are permitted to recover all of the 90% of the total construction costs found to be prudently incurred through annual depreciation expense over the expected life of the plant. The KCC set limitations on the right of the utilities to a return *on* that portion of the construction costs found to constitute excess physical capacity and excess economic capacity with the possibility of those costs being included in the rate base at some time in the future.

The three basic areas of dispute in this appeal arise from the deductions of those portions of the construction costs from the rate base of each utility found to be imprudent costs of construction, excess physical capacity, and excess economic capacity.

In connection with these areas of dispute, the utilities have raised many issues of law for the court's consideration. We will discuss each of the basic areas of dispute separately.

Deduction of Imprudent Construction Costs from the Rate Base

The rate-setting approach for the KCC is divided into two phases—revenue required and rate design. By "revenue required" is meant the additional money, if any, that the company needs to meet its obligations and also to have an opportunity to earn a fair profit. Rate design is the process by which the revenue requirement will be spread over the various classes of customers. That process is not involved in this appeal.

In order to arrive at the revenue requirement, three factors must be carefully analyzed by the KCC:

(1) The rate base;

(2) The operating expenses; and

(3) The percentage rate of return to be applied to the rate base.

The basic issues presented in this case involve the determination of the rate base. The "rate base" may be defined as the dollar amount of a given utility's investment in the plant and property "used and required to be used" in supplying the service that the utility has undertaken to furnish. The rate base is the valuation sought under the provisions of K.S.A. 66-128. The rate base includes items such as the value of generation and transmission facilities and rights-of-way, and equipment of all kinds. Ordinarily, discarded and abandoned property due for retirement is excluded from the rate base. It is the rate base on which the owners of the utilities have a right to earn a fair return. The rate base multiplied by the fair rate of return yields a sum in dollars that the KCC considers reasonable.

There are a number of methods which regulatory agencies use in determining the rate base for a particular utility. The original cost of construction of a facility

may be utilized but may be reduced where a portion of the cost is due to imprudent or unjustified expenses. See *San Diego Land & Town Co. v. Jasper*, 189 U.S. 439, 47 L. Ed. 892, 23 S. Ct. 571 (1903). Another method used to establish the rate base is the determination of the fair or reasonable value of the property. K.S.A. 66-128 provides that the KCC shall determine the reasonable value of the property of the utility which is used and required to be used in its services to the public in order to enable the Commission to fix fair and reasonable rates. In *State, ex rel. v. Telephone Co.*, 115 Kan. 236, 261, 223 Pac. 771 (1924), it was held that the original cost is not the measure of the rate base but rather the "going-concern value" of the plant. In *Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, as noted heretofore, it was held that the KCC is not bound to use any particular formula, or combination of formulae, in valuing a public utility's property for ratemaking purposes. Any evidence having a bearing on reasonable value may be considered, and the KCC may then use any formula or combination of formulae that it may believe necessary for arriving at a reasonable basis for rate-making purposes.

At the hearing before the KCC, a great deal of expert testimony was presented by the utilities showing that great efficiency and prudence was used by the contractor in the construction of the Wolf Creek plant. To the contrary, the staff of the KCC presented other competent experts who testified that a substantial portion of the construction costs was insufficiently and imprudently incurred. The findings of the KCC set forth this testimony in great detail. It would serve no useful purpose to restate the testimony of the various expert witnesses who testified on behalf of the parties. As noted heretofore, the KCC disallowed a total of approximately $183,000,000 or about 10% of the total cost of construction as costs which were imprudently incurred.

The KCC's disallowance for imprudent construction costs consisted of three distinct quantifications:

(1) $37,961,400 of direct and associated indirect costs attributable to disallowed man-hour overruns;

(2) $244,561,400 of indirect and overhead costs attributable to disallowed schedule delays; and

(3) $450,000 of the fees paid to the primary contractor, Daniel International Corporation, for work which was not performed and which was performed by other contractors.

There is substantial, competent evidence in the record to support the disallowances in each of these categories. There was evidence from which the KCC could reasonably find that KGE and KCPL, as owners of the plant, were imprudent and inefficient in the manner in which they supervised the construction of the plant. We recognize, of course, that there was expert testimony to support findings of both imprudence on the one hand and prudent management control on the other. Perhaps if this court had the obligation and authority to determine this issue, it might have decided it differently. However, because there is substantial, competent evidence in the record to support the findings of the KCC as to imprudent construction costs, we are bound by those findings and cannot substitute our judgment for that of the Commission.

The utilities, however, raise a number of legal issues specifically relating to the finding of imprudent costs. They maintain that the KCC, in determining imprudent costs, applied an unreasonable standard of perfection rather than mere prudence, although they recognize that K.S.A. 66-128c afforded the Commission the power to evaluate the construction of Wolf Creek and to exclude construction costs incurred as the result of imprudence or mismanagement. They complain that there is no definition of prudence in the statutes.

In construing statutes, words and phrases should be construed according to context and approved usage of the language, and words in common use are to be given their natural and ordinary meaning. *Jackson v. City of Kansas City*, 235 Kan. 278, 680 P.2d 877 (1984). As noted heretofore in this opinion, the word "prudence" has a common and ordinary meaning. The various factors listed in K.S.A. 66-128g(a) provide sufficient guidelines for determining prudence which obviates the need for a definition of the term.

The utilities complain that the KCC did not accept their evidence consisting of a comparative analysis of the construction costs and schedules at Wolf Creek with similar factors at other nuclear power plants constructed during the same period. The KCC rejected this evidence on the basis that the comparative analysis was incomplete, misleading, or irrelevant, and did not support the owners' conclusions. This the KCC had a right to do.

The utilities argue that the KCC used hindsight in determining imprudence rather than considering performance as of the time construction was in progress. This contention is not supported by the record. We hold that the KCC did not determine the issue of imprudence solely on the basis of hindsight, but rather on the basis of substantial, competent evidence.

The owners attack K.S.A. 66-128g(b) as violative of due process because it creates a rebuttable presumption that construction costs of a plan or facility have been incurred due to a lack of prudence as to that portion of the total costs which exceeded 200% of the "original cost estimate." Presumptions may be created by statute if there is a rational connection between the fact proved and the fact presumed. The test in this case is whether a logical inference of management imprudence can be drawn from evidence of total cost greater than 200% of the original cost estimate, or whether there is some

justification in public policy for such an inference to be drawn. In our judgment, management imprudence can reasonably be inferred from the fact a particular project cost exceeded by more than 200% the definitive estimate. Other states by statute have imposed a cap or limitation on the construction costs of nuclear plants. *Re Seabrook Unit No. 1*, 63 P.U.R. 4th 673 (Conn. 1984.) We believe that the presumption is logical in the context of utility regulation, where the ratepayer normally reimburses the utility for its expenses. The fact that there is such a presumption does not determine the issue, for the KCC still has the duty to examine the reasonableness of the construction costs, which is exactly what the KCC did regarding the Wolf Creek costs in this case.

The utilities next maintain that K.S.A. 66-128c only authorizes the KCC to exclude the imprudent costs of construction *from the revenue requested and not from the utility's base rate.* That statute provides, in substance, that the KCC, in determining the *reasonable value of property* under K.S.A. 66-128, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. If inefficiency or imprudence is found, the KCC has the right to exclude all or a part of those costs from the revenue requested by the utility. As noted above, it is the rate base which must first be determined before an appropriate return may be allowed by a regulatory agency. The rate base is the major focal point of a rate proceeding. In order for the KCC to reduce a utility's requested revenue increase by costs found to be inefficiently or imprudently incurred, it must, of necessity, reduce the rate base by the amount of the cost disallowance.

In the past, the Kansas courts have held that the exclusion of certain disallowances from the rate base is a discretionary function of the KCC. *Kansas City Power & Light Co. v. KCC*, 224 Kan. 86, 88, 578 P.2d 254 (1978); *Kansas-Nebraska Natural Gas Co. v. Kansas Corporation*

Commission, 4 Kan. App. 2d 674, 610 P.2d 121, *rev. denied* 228 Kan. 806 (1980).

KEPCo, in its brief, takes the position that the KCC decision disallowing imprudent construction costs in KEPCo's rate base is unlawful on the basis that the Commission cannot make such a disallowance without finding KEPCo itself to be imprudent. KEPCo argues that the disallowance for imprudent construction costs cannot be attributed to KEPCo, because those cost overruns were imprudently incurred prior to its acquisition of a 6% ownership in the Wolf Creek plant. In its order, the Commission found as follows:

> "20. The Commission finds that KEPCo should be held accountable for its proportional share of cost incurrence found to be imprudent notwithstanding the fact that many of the costs found to be imprudent were incurred prior to the purchase of KEPCo's six percent interest in 1981. The record appears clear that KEPCo did not analyze the cause of Wolf Creek cost overruns to determine the reasonableness of incurrence prior to its 1981 purchase of a six percent share. . . .
>
> . . . .
>
> "Having failed to inquire into the reasonableness of Wolf Creek cost incurrence prior to (or subsequent to) its purchase of an interest in Wolf Creek, the Commission finds that imprudence in cost incurrence prior to the purchase of KEPCo's interest should be imputed to KEPCo and that KEPCo is responsible for imprudence in cost incurrence subsequent to the purchase of its interest. The Commission finds that KEPCo ratepayers should be shielded from imprudently incurred costs and herein excludes such costs from KEPCo's rate base. The Commission distinguishes imprudently incurred costs which are excluded from rate base from questions of economic loss resulting from excessively expensive capacity.

> The latter costs are appropriately shared by ratepayers and owners. That objective is achieved in the case of KEPCo by collection of costs through rates."

The Commission disallowed $22,818,000 from KEPCo's rate base. None of the parties have cited a case directly on point. K.S.A. 66-128c expressly provides the Commission with the authority to evaluate the efficiency or prudence of *acquisition* as well as construction practices of that utility in disallowing imprudent costs.

In the present case, the Commission found that KEPCo failed to analyze the causes or determine the reasonableness of the Wolf Creek cost overruns prior to its *acquisition* or purchase of Wolf Creek in 1981. Thus, we believe that it was within the Commission's power to disallow those amounts of overruns from KEPCo's rate base. Furthermore, if a portion of the cost of construction was imprudently incurred, that situation would not be changed simply because KEPCo purchased a share of the plant at a later time. KEPCo is not in the position of a *bona fide* purchaser for value. It takes its share of ownership in the plant subject to any imprudent construction disallowance.

The KCC's duty was to determine the fair value of the plant. In so doing, it had the authority to eliminate those portions of the construction costs which were inefficiently or imprudently incurred. The KCC requested KEPCo to come up with a plan to take care of any financial problems caused by its order by means of a surcharge or otherwise. In our judgment, the KCC had the power to handle the matter in that way. Although the parties apparently agree that KEPCo's shareholders and ratepayers are the same people, we will leave it up to the future determinations of the KCC as to the appropriate action required to solve any problems that might remain. KEPCo may still appeal any later order it deems unlawful or otherwise improper.

We have considered all of the contentions of the utilities and the evidence in the record in this case and have concluded that the KCC's disallowance of those construction costs it found to have been imprudently incurred was supported by substantial, competent evidence, was within the statutory powers of the KCC, and was neither unlawful, arbitrary, nor capricious.

Deduction of Excess Physical Capacity from the Rate Base

The KCC, in its order, found that approximately $944,000,000 of the prudent construction costs should be excluded from the rate base for the reason that a portion of these costs constituted excess physical capacity, because part of the plant was not "used or required to be used" to provide current services to the ratepayers. This disallowance for excess physical capacity was allocated in the amount of approximately $716,000,000 to the rate base of KGE and $228,000,000 to the rate base of KCPL. No deduction was made from the rate base of KEPCo. KGE and KCPL maintain that this order of the KCC was unreasonable and unlawful.

The cases in this field hold that a utility is not necessarily entitled to a return and profit on its investment in a new generating plant simply because it acted prudently in deciding to build and in actually constructing the plant. It is the usual practice for a state regulatory commission to inquire whether a new plant is "used and useful in rendering service to the public." The Kansas statutes enacted in 1984 varied this test slightly. K.S.A. 66-128 requires the KCC to determine the reasonable value of all or *whatever fraction or percentage of the property of* any public utility which is "used and required to be used" in its service to the public within the State of Kansas.

K.S.A. 66-128c defines "excess capacity" to mean any capacity in excess of the "amount used and required to

be used" to provide adequate and reliable service to the public. The KCC is authorized in its discretion to prohibit or reduce the return costs incurred in constructing, maintaining, or operating excess capacity. K.S.A. 66-128b authorizes the Commission to require a public utility to defer inclusion of the reasonable value of property determined to be not currently used and required to be used and may require the phase-in of such value over any period of time or in such increments as it deems to be appropriate.

Other state regulatory commissions have reached similar results under the simpler and more traditional "used and useful" test by determining: (1) Whether the utility has constructed excess capacity; (2) what effect such excess capacity should have on the calculations of the revenue requirement; and (3) which plants to exclude from the rate base in the event of excludable excess capacity. The statutory provisions for excluding excess capacity are intended to prohibit a utility from earning a return on an investment which is not being used to accomplish the utility's ultimate goal of providing services to its customers.

In determining the excess physical capacity of Wolf Creek in this case, the KCC stated that the factors to be considered are: (1) Peak demand or responsibility, (2) reserve margin, and (3) available capacity. In determining available capacity, the Commission used the companies' accredited capacity figures. The Commission also found certain generation facilities were available for use even though the companies claimed such facilities had been retired, including KCPL's Hawthorn Units 1 and 2.

The Commission ultimately found that 327 megawatts (MW) of KGE's available capacity and 314 MW of KCPL's available capacity were not used and required to be used and thus constituted excess physical capacity. It must be emphasized again that the KCC did allow a full recovery of those costs through depreciation. The KCC

denied KGE and KCPL only a return or profit on those costs. The KCC also recognized that inclusion in the rate of such costs or a portion thereof would be subject to future KCC orders as more of Wolf Creek became used and required to be used.

The KCC recognized that, in determining excess capacity, electric utilities must be permitted to plan for the future and that it would be ridiculous to construct generating plants only when the need arises and without anticipating future growth. *Kansas Gas & Electric Co. v. State Corporation Commission*, 218 Kan. 670, 677, 544 P.2d 1396 (1976). The KCC selected the year 1990 as the reference year, allowing for five years of projected growth in peak demand from 1985, when Wolf Creek was to commence its operations. The KCC thus set a five-year period for a planning horizon or load forecast.

The KCC also determined the reserve margins for each utility sufficient to cover any day-to-day variations in operating conditions. All utilities must have some reserve capacity to protect against shortages caused by occasional plant shutdowns. The utility should be able to recover investments in, and a profit on, that reserve capacity. The problem is to establish a reserve margin that is high enough to provide reliable and adequate service, but not so high that customers are charged for unnecessary plant capacity. The expert witnesses suggested that a 15% to 25% reserve margin was required. The KCC considered the testimony of the various experts and found that a reserve margin of 20% was justified.

The utilities maintain that the Commission did not apply proper legal standards in determining excess capacity. We find this contention to be without merit. The standards applied were those required by the 1984 Kansas statutes discussed above.

The utilities contend that the Commisson arbitrarily, unreasonably, and erroneously chose the year 1990 to calculate the owners' system capacity balances. In its

findings, the Commission noted that the selection of a reference year was difficult, because no witnesses had proposed standards for selection of a reference year. We cannot say that the selection of 1990 was arbitrary. It provided a five-year planning horizon perspective which is reasonable. We hold that the selection of the reference year of 1990 was not arbitrary. This is especially true because the Commission, in its order, recognized that if there were changes in the demand for electricity in the years to some, the owners could seek the Commission's approval to include more of Wolf Creek in the rate base.

Likewise, the contention of the utilities that the Commission's peak demand forecast did not consider any possible increase in the demand for electricity generated by lower rates is not persuasive. If future power demands exceed the KCC's forecast because of price elasticity, the utilities may request another hearing before the Commission.

KCPL maintains that the Commission's inclusion of 41 MW of purchased power in KCPL's available capacity while excluding all purchased power in determining KEPCo's available capacity is a denial of equal protection of the law. The Commission took the position that KEPCo is not similarly situated with KGE and KCPL. Prior to Wolf Creek, the operations of KEPCo were totally reliant on purchased power to meet their load requirements. KEPCo elected to become an owner of a share of the electric generating plant at Wolf Creek rather than remaining a wholesaler of electricity. KEPCo is different from the other two utilities because KEPCo is an electric cooperative, not a shareholder utility. The difference is discussed in *Sekan Electric Coop. Ass'n v. Kansas Corporation Commission*, 4 Kan. App. 2d 477, 609 P.2d 188 (1980), where an electric cooperative was treated differently from an investor-owned utility in regard to "equity returned capital." The court pointed out that a cooperative does not secure equity by stock offerings in the marketplace and a return large enough to pay dividends

is not required to attract equity capital or to make a cooperative financially sound.

KEPCo is a nonprofit generating and transmitting wholesale distributor of electricity to its member rural electric cooperatives. The shareholders or stockholders are the ratepayers. The record shows that KEPCo was required to purchase a portion of the electricity transmitted to obtain the lines to get the electricity to its customers. KEPCo and the other utilities are not similarly situated and we cannot say that the Commission's order violated KCPL's right to equal protection.

KCPL contends that the Commission erroneously included KCPL's Hawthorn Units 1 and 2 in determining that utility's available capacity because those units have been retired from service. The addition of those units added an additional 130 MWs to KCPL's available capacity in 1990. The evidence presented by KCPL showed that Hawthorn Units 1 and 2 are fossil fuel-fired plants placed in inactive reserve by KCPL in 1984 and retired on December 31, 1984, but they could be rehabilitated in the future, if an additional need for electricity arose. The Commission found that the units were retired only in an accounting sense and were "retired" long before the previously scheduled retirement dates of 1991, which would correspond with a normal 40-year life for fossil fuel steam plants. Furthermore, although the evidence regarding Hawthorn Units 3 and 4 was similar, the Commission did not include them in the available capacity. We have concluded that the Commission acted reasonably and considered the interests of all parties in arriving at its decision.

KGE complains that the finding of the Commission that a portion of Wolf Creek is excess capacity is unreasonable because Wolf Creek replaced the older KGE gas/oil units, which Wolf Creek was constructed to and did displace. We find no merit to this contention. It was the construction of Wolf Creek that created the excess

capacity. A regulatory Commission has broad discretion to determine which plant constitutes excess capacity. Furthermore, as older units become so obsolete that their retirement is necessary, that fact will be reflected in future orders of the Commission.

We have considered all of the legal issues raised by the utilities and considered the record as a whole. We have concluded that there is substantial, competent evidence to support the findings of the KCC in determining excess physical capacity, and that the Commission followed the statutory standards and exercised its discretion in a lawful manner.

Deduction of Excess Economic Capacity from the Rate Base

After determining that disallowances from the rate base should be made for imprudent construction costs and excess physical capacity, the Commission concluded that an economic evaluation of Wolf Creek was necessary. The Commission was impressed by testimony that, apart from whether excess physical capacity exists, a nuclear plant may represent capacity which is not economical because it has excessive capital costs when compared to alternative types of generating facilities.

The Commission found from the evidence that Wolf Creek was an extraordinarily expensive means of providing electric generating capacity. It valued Wolf Creek at a cost of $1290 per KW, which included an allowance for the lower operational costs of Wolf Creek compared to coal plants. The Commission considered the costs of construction of a goal generating plant as a benchmark for its evaluation because the greater capital costs for the Wolf Creek nuclear facility were of doubtful economic benefit to the ratepayers. The Commission concluded that no profit or return on that economically inefficient excess should be allowed KGE or KCPL. However, as part of an overall risk-sharing approach, the Commission did

allow total recovery of those costs through depreciation. Because the KEPCo shareholders are the same people as the ratepayers, the Commission found that risk sharing was accomplished without an explicit exclusion from KEPCo's rate base.

In determining that there should be a disallowance from the rate bases of KGE and KCPL for excess economic capacity, the Commission balanced the interests of the utility investors with the interests of the ratepayers. In doing so, it used a risk-sharing approach. In *Kansas Gas & Electric Co. v. State Corporation Commission*, 218 Kan. at 674, this court stated that, in fixing the rates of an electrical utility under K.S.A. 66-128, the Commission has a two-phase duty in determining the rate base:

(1) To determine the property of a utility used or required to be used in its services to the public, and

(2) to ascertain the reasonable value of such property whenever it deems the ascertainment of such value is necessary to fix fair and reasonable rates. K.S.A. 66-128 was amended in 1984 to authorize the Commission to determine the fraction or percentage of a facility that is used and required to be used.

Under K.S.A. 66-128c, the Commission is empowered to evaluate the efficiency or prudence of acquisition, construction, or operation of a utility. One of the factors to be considered for determination of the reasonable value of electric generating property set forth in K.S.A. 66-128g is factor No. 11, which requires the Commission to consider whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest to Kansas. That is obviously a legislative recognition of the risk-sharing approach.

In using the risk-sharing approach to arrive at the reasonable value of Wolf Creek, the Commission looked to the factors in K.S.A. 66-128g(a) and discussed the evaluation with respect to (1) the owners' decision to

build and continue Wolf Creek; (2) the economic impact and rate comparisons; and (3) the risk assumptions and sharing which included a finding that the owners accepted enormous risks in building Wolf Creek.

The utilities contend, in substance, that the Commission erred in applying its risk-sharing approach and that it should have evaluated Wolf Creek at its actual prudent cost without consideration of the impact of the proposed rate increases on the ratepayers and the general public. The balancing of the rights of the investors and ratepayers and consideration of risk sharing is not a new procedure in Kansas. In *Kansas Power & Light Co. v. Kansas Corporation Commission*, 5 Kan. App. 2d 514, 525-29, 620 P.2d 329 (1980), *rev. denied* 229 Kan. 670 (1981), the Court of Appeals addressed the Commission's treatment of a KP&L gain on the sale of its office building in Salina. KP&L treated the gain as outside its accounts for rate-making purposes. The Commission treated the gain as appropriate for rate making and allowed the gain to flow through to the ratepayers. The court recognized the balancing of gains and losses between ratepayers and stockholders and mentioned the risk of loss of investment capital as a factor to be considered.

In *Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, 389 P.2d 515 (1963), which is discussed earlier in the opinion, this court recognized that the Commission should receive and consider any evidence which has a relevant bearing on reasonable value and then determine what formula, or combination of formulae, it believes should be used under the facts and circumstances of the case to arrive at a reasonable value of the property for rate-making purposes.

There are cases in other jurisdictions which hold that the present fair value of generating facilities cannot exceed the present cost of constructing a *substitute* system of modern design, capable of generating and distributing the same quantity of power at less operating expense.

See *Utilities Comm. v. Power Co.*, 285 N.C. 377, 206 S.E.2d 269 (1974). In *Utilities Comm. v. Power Co.*, 285 N.C. 398, 206 S.E.2d 283 (1974), the court stated that neither original cost nor replacement cost are a measure of fair value but only indicators thereof. The term "just and reasonable rates" imports flexibility in the exercise of a complicated regulatory function by a specialized decision-making body and this was not intended to confine the ambit of regulatory discretion to an absolute or mathematical formula but rather to confer on the regulatroy authority the power to make and apply policy concerning the appropriate balance between prices charged to utility customers and returns on capital to utility investors consonant with constitutional protections applicable to both. *Pennsylvania, etc. v. Pennsylvania Gas*, 492 Pa. 326, 337, 424 A.2d 1213 (1980), *cert. denied* 454 U.S. 824 (1981).

The Commission referred to other jurisdictions which have recognized "risk sharing" as a valid approach to the problem of excess capacity and cancelled plant situations. *Iowa Planners Net. v. Iowa State Commerce*, 373 N.W. 2d 106, 110 (Iowa 1985); *Phila. Electric Co. v. Pa. P.U.C.*, 61 Pa. Commw. 325, 433 A.2d 620 (1981); *Re Carolina Power and Light Co.*, 49 P.U.R. 4th 188 (N.C. 1982); *Re Otter Tail Power Co.*, 44 P.U.R. 4th 219 (N.D. 1981). See, *Re Nine Mile Point No. 2 Nuclear Station*, 62 P.U.R. 4th 455 (N.Y. 1984); and Colton, *Excess Capacity: Who Gets the Charge from the Power Plant?*, 34 Hastings L. J. 1133, 1146-49 (1983), where the Commission applied risk sharing to capital costs which exceeded construction costs.

The utilities raise a number of legal issues attacking the disallowance for excess economic capacity. They maintain that the imposition of a reasonable value methodology after Wolf Creek was already constructed and placed into service would deny the utilities a fair opportunity to earn a fair return on their investment. They

question the sufficiency of the evidence to support the findings of the Commission. We find these contentions to be without merit. In our judgment, the statutory provisions adopted in 1984, coupled with the prior decisions of the Kansas courts, gave to the KCC a broad authority to evaluate the Wolf Creek generating plant, including the use of the risk-sharing approach in determining excess economic capacity.

The utilities argue that the Commission's use of a reasonable value methodology was invalid because it denied recovery of expenses actually incurred which were necessary to comply with safety regulations of the NRC. In this case, the utilities were allowed to recover all of the costs of Wolf Creek except the disallowance for imprudent costs. The Commission simply denied the utilities a return on that portion of Wolf Creek which represented physical or economic excess capacity. Thus, the amount of the Wolf Creek costs that resulted from compliance with NRC safety requirements are to be recovered by the utilities. Furthermore, the utilities' argument that the orders of the KCC interfere with safety regulations of the NRC has been rejected by the United States Superme Court. In *Pacific Gas & Elec. v. Energy Resources Comm'n*, 461 U.S. 190, 75 L. Ed. 2d 752, 103 S. Ct. 1713 (1983), the United States Supreme Court stated that although Congress intended that the federal government should regulate the radiological safety aspects involved in the construction and operation of nuclear plants, the states retain their traditional responsibility in the field of regulating electrical utilities for determining questions of need, reliability, cost, and other related state concerns. The determination of the rate base by the Commission in this case does not in any way encroach on the power of the NRC to establish and regulate the safety requirements of nuclear plants.

The utilities also complain that the KCC does not have the authority to phase-in the rate increases over a period

of five years. We find this contention to be without merit. In the first place, we note that KGE and KCPL requested in their rate application that the KCC phase-in their proposed rate increases. The Commission did just that. Furthermore, K.S.A. 66-128b specifically authorizes the Commission to phase-in "the reasonable value of property determined not currently used or required to be used." The phasing-in of increased rates over a period of time has the effect of balancing the interests of the current ratepayers and the interests of future ratepayers. In addition, phasing-in the value of property as a part of the rate base is a useful tool which the KCC may use in balancing the interests of the investors and the ratepayers.

KCC's Method of Allocating the KPCL Rate Base and Cost of Services Between Kansas and Missouri

Because of the fact that KCPL provides electrical service to customers in both Kansas and Missouri, that utility has raised an issue regarding the Commission's allocation of the rate base and cost of service between those two states. KCPL contends that the method of allocation used was arbitrary, unconstitutional, unlawful, and confiscatory.

Because of the interstate nature of KCPL's business, the regulatory commissioners in both Kansas and Missouri are required to allocate KCPL's operating costs and plant investment between the residents of those states. One commonly used method of allocating a public utility's costs is termed the "coincident peak" or "C.P." method. This method allocates operating costs and plant investment to the jurisdictions actually served by a utility based upon the percentage of total system demand contributed by customers in the serviced jurisdictions during certain periods of time. KCPL took the position that, since the demand of Kansas customers is at its very highest in the four summer months when air-con-

ditioning usage is at its greatest, the 4 C.P. method should be used in making the allocation. The KCC staff disagreed. Although agreeing that KCPL's total amount of generating capacity may be determined by summer peak cost, it found that total capacity is determined by all twelve months of the year. The staff recommended that the 12 C.P. allocation be used, because it recognized KCPL's capacity requirements throughout all 12 months of the year. The Commission found that the 12 C.P. allocation factor is the most appropriate method of allocating KCPL's production costs and transmission plant value between the jurisdictions because it better recognizes KCPL's investment in base-load facilities used year round and not solely during the summer peak months. We cannot say that the Commission's adoption of the 12 C.P. method was unreasonable or in any way illegal. We note that KGE requested and the Commission adopted the 12 C.P. methodology in connection with the KGE plants. At the time the KCC made its decision, KCPL's case was still pending before the Missouri commission. In the event that consistent methodology is not adopted by Kansas and Missouri, KCPL can make an application to the KCC for relief.

The Reasonableness of the Overall Result

As we stated at the beginning of this opinion, in a rate-making case, the goal of the KCC, as a state regulatory agency, should be to establish a rate within the "zone of reasonableness" after application of a balancing test in which the interests of all concerned parties are considered. In our judgment, the KCC has accomplished that result.

The KCC acted within its statutory powers. The utilities received virtually all of the operating expenses that they requested to operate and maintain the plant and to decommission it at the end of its life. The KCC eliminated approximately 10% of the costs of construction

which it found to be inefficiently and imprudently incurred. All of the remaining 90% of the Wolf Creek construction costs are to be recovered through annual depreciation expenses over the life of the plant. It is only the return or profit on certain costs which has been restricted by the Commission. The disallowances for excess physical capacity and excess economic capacity were properly determined by the use of recognized methodology as the Commission proceeded to determine a fair valuation of the Wolf Creek property. The KCC left the door open for the possibility that portions of the construction costs found to constitute excess physical capacity and excess economic capacity might be included in the rate bases at some time in the future. We find no error in any actions taken or orders entered by the KCC.

The orders of the Kansas Corporation Commission are affirmed.

SCHROEDER, C.J., dissenting: Viewing the "end result" of the orders of the Kansas Corporation Commission (KCC) from the record presented to this court for review, it is readily apparent the orders are unlawful, unreasonable, arbitrary and capricious.

In *Power Comm'n v. Hope Gas Co.*, 320 U.S. 591, 88 L. Ed. 333, 64 S. Ct. 281 (1944), the United States Supreme Court addressed the considerations to be taken into account by the Federal Power Commission in setting "just and reasonable" rates for natural gas companies, as required by sec. 4(a) of the Natural Gas Act of 1938, 15 U.S.C. § 717 (1982). In applying the standard requiring "just and reasonable" rates, the *Hope* court emphasized the focus of inquiry is upon the end result or "total effect" of the rate order, rather than the rate-setting method employed. The court described the rate determination process as a balancing process between the various interests, including the consumer and the investor.

Rates set within the "broad zone of reasonableness" cannot be attacked as confiscatory if, in the balancing test, proper consideration is given the interests of the utilities' investors, the present ratepayers, the future ratepayers, and the public. *Permian Basin Area Rate Cases*, 390 U.S. 747, 770, 20 L. Ed. 2d 312, 88 S. Ct. 1344, *reh. denied* 392 U.S. 917 (1968).

A more detailed examination of these various interests and the law applicable to this case will be discussed later. Of prime importance to my reasoning, which brands the decision of the KCC in this case as arbitrary and confiscatory, are several established facts.

First: Counsel for the KCC *admitted*, in argument of this case before the Kansas Supreme Court, that the initial decision of the utilities to build a nuclear reactor plant at Wolf Creek for the generation of electricity was *not an imprudent decision.* The general nature of the admission concedes the generating capacity of the Wolf Creek plant as planned was reasonable.

Second: In January 1977, the Nuclear Regulatory Commission (NRC), the successor to the Atomic Energy Commission, issued a temporary work authorization permit for the construction of a nuclear facility on Wolf Creek in Coffey County for the generating capacity planned by the utilities.

Third: The KCC determined a total of $183 million, or about 10% of the costs of construction of the Wolf Creek facility attributable to Kansas, was inefficiently and imprudently incurred. On this sum the utilities were denied both a recovery of and a return on that portion of the costs of construction. Without conceding this to be a proper determination, for purposes of my dissent it will be assumed the determination was within the evidence presented and within the discretionary power of the KCC. (The KCC made this determination using perfect hindsight without taking into consideration the information

and data available to the utilities when the decisions were made.)

The court in its opinion attributes vast expertise to the KCC to regulate utilities in the public interest. The opinion also states that to guard against arbitrary action the KCC is required to state expressly its findings of fact and conclusions of law. This concession by the court, however, does not warrant the court's abrogating its function of review on appeal as mandated by the legislature. *Kansas Bd. of Regents v. Pittsburg State Univ. Chap. of K-NEA*, 233 Kan. 801, 830, 667 P.2d 306 (1983) (Schroeder, C.J., dissenting).

The historical background and other factual recitations related in the court's opinion will not be restated, and further discussion will proceed on the assumption the reader is familiar with this information. In my opinion, the KCC has simply refused to recognize reality concerning the economic conditions of national scope encountered by the utilities after entering into the contract for construction of the Wolf Creek facility.

Figuratively speaking, the record discloses the KCC, from the time of its initial investigation into the cost overruns at the Wolf Creek plant in 1979, began loading its guns with ammunition for bear to ambush the utilities with the rate orders it eventually entered, after the utilities applied to the KCC to authorize a rate increase.

Legislation was enacted in 1984 (K.S.A. 66-128 through 66-128k) and amended in 1985 (K.S.A. 66-101 *et seq.*). This legislation was referred to by Robert Vancrum as *The Wolf Creek Excess Cost—Excess Capacity Bill*, 33 Kan. L. Rev. 475 (1985). The legislation is broad in scope and was enacted in anticipation of rate increases from 40% to 110% when the Wolf Creek plant become operational. This legislation *as construed and as applied by the KCC* is unconstitutional. It was enacted seven years after construction of the Wolf Creek facility was

begun in 1977. True, it was enacted before the utilities made application for a rate increase, but it was applied to the utilities as a penal statute by the KCC to force a gigantic forfeiture of capital investment. As this legislation was applied, it is arguably an ex post facto law. While the United States constitutional provision (art. 1, sec. 10) prohibiting the enactment of ex post facto laws by the states is applied primarily to criminal enactments, it has also been extended to civil statutes that are penal in nature. The courts look to the purpose of the statute to see if it is punitive or penal. See *Flemming v. Nestor*, 363 U.S. 603, 613-18, 4 L. Ed. 2d 1435, 80 S. Ct. 1367 (1960); *American Power and L. Co. v. Securities and Ex. Com'n*, 141 F.2d 606 (1st Cir. 1944), *aff'd* 329 U.S. 90, 91 L. Ed. 103, 67 S. Ct. 133 (1946); *Dock Watch Hollow Quarry Pit v. Tp. of Warren*, 142 N.J. Super. 103, 361 A.2d 12 (1976), *aff'd* 74 N.J. 312, 377 A.2d 1201 (1977); *Springer v. Whalen*, 68 App. Div. 2d 1011, 415 N.Y.S.2d 106 (1979).

Furthermore, as construed and as applied by the KCC the legislative enactment is confiscatory—violative of the due process clause of the U.S. Constitution. It is the taking of private property for public use without just compensation. *Power Comm'n v. Pipeline Co.*, 315 U.S. 575, 86 L. Ed. 1037, 62 S. Ct. 736 (1942); *Bluefield Co. v. Pub. Serv. Comm.*, 262 U.S 679, 67 L. Ed. 1176, 43 S. Ct. 675 (1923); *Smyth v. Ames*, 169 U.S. 466, 42 L. Ed. 819, 18 S. Ct. 418 (1898); *Williams v. City of Wichita*, 190 Kan.. 317, 341, 374 P.2d 578 (1962) (Schroeder, J., dissenting).

The legislative enactments of 1984 and 1985 pertaining to Wolf Creek need not be held unconstitutional, if there is any way to uphold their constitutional validity. This can be done by construing the legislative enactments to require compliance with *Hope* and other state and federal decisions which mandate that rates set for public utilities fall within the "broad zone of reasonableness"

by a balancing process between the various interests—the interest of the utility investors, the present ratepayers, the future ratepayers, and the public.

Taking into consideration the equation which requires the balancing of the various interests and the three factual considerations heretofore enumerated, what did the KCC do?

It heard the testimony of 479 consumers of electricity; 475 of them were present ratepayers. Their common voice was one of opposition to increased electric utility rates. It is apparent the end result of the KCC order reflects almost a complete disregard of the other interest groups in the equation.

With focus on the major issue in this case, determination of the *rate base* attributed to the Kansas portion of the Wolf Creek facility, how did the KCC accomplish its result? First, the KCC made a deduction of 10% imprudent construction costs from the rate base, for which no income on or recovery of capital is permitted. This forecloses *further penalty for imprudent* management decisions.

Second: the KCC then made a major deduction from the rate base of those construction costs attributable to excess physical capacity. This is a deduction based on all construction costs of the Wolf Creek plant attributable to Kansas over and above the used and useful portion needed for the generation of electricity to supply present and reserve needs which the KCC projected to the 1990 anticipated need. However, to determine excess generating capacity of the Wolf Creek facility the KCC included the electric generating capacity of two Hawthorn fossil fuel plants that had been decommissioned and put in mothballs. The effect of this was to increase the excess capacity of the Wolf Creek facility, which resulted in a larger deduction from the rate base for excess physical capacity. This was done in the face of notification to the utilities in the early 1960s that fossil fuels were being

depleted and would eventually become unavailable for the generation of electricity.

Many public utility commissions in other states have made no deduction for excess capacity from the rate base. *Re Iowa-Illinois Gas & E. Co.*, 56 P.U.R. 4th 361 (Ill. 1983); *Re Public Service Co. of Indiana*, 51 P.U.R. 4th 6 (Ind. 1983); *Re Cleveland Electric Illum. Co.*, 46 P.U.R. 4th 63 (Ohio 1982); *Re Pacific Power & Light Co.*, 63 P.U.R. 4th 642 (Or. 1984).

Third: Not content with the end result after the enormous deduction for excess physical capacity from the rate base, the KCC then made a further enormous deduction from the portion of the Wolf Creek facility attributable to Kansas for what it termed "excess economic capacity." This portion of the Wolf Creek plant costs excluded from the rate base (representing investment in "*excess economic capacity*") is not warranted because it represents a further deduction from that portion of the plant which the KCC specifically *found to be used and useful.* This additional exclusion from the rate base is simply a double-whammy for "excess capacity."

No cases have been cited to this court, and our research has disclosed none, where any court has upheld an exclusion of excess economic capacity from the rate base similar to what the KCC has done here. State commissions where an attempt was made rejected the deduction of excess economic capacity from the rate base. *Re Washington Water Power Co.*, 60 P.U.R. 4th 503 (Idaho 1984); *Re Union Electric Co.*, 67 P.U.R. 4th 218 (Ill. 1985); *Re Union Electric Co.*, 72 P.U.R. 4th 444 (Iowa 1986).

The method used by the KCC to determine "excess economic capacity" was the unprecedented revaluation of the Wolf Creek facility to generate electricity as a hypothetical coal plant. It compared the cost of generating one megawatt of electricity in a newly constructed

hypothetical coal plant to the cost of generating one megawatt of electricity in the Wolf Creek facility based on the construction costs of the Wolf Creek facility. It is conceded electricity generated from a nuclear energy plant requires greater capital investment in the initial construction, but it is much cheaper to operate once the plant is constructed. A coal plant costs less to construct, but it is more expensive to operate.

The KCC refused to permit the utilities in this case to present their evidence that the Wolf Creek facility was the most efficiently built nuclear energy facility in the United States as of the time it was constructed.

The fallacy in the determination made by the KCC to deduct "excess economic capacity" from the rate base is disclosed by an analysis of the reasons for the tremendous increase in construction costs after initial construction began. Approximately 50% of the increased costs encountered by the utilities in constructing the Wolf Creek facility were attributable to changing regulatory safety requirements imposed by the federal Nuclear Regulatory Commission following the Three Mile Island nuclear accident in Pennsylvania. These costs were not anticipated when construction of the Wolf Creek facility began. There was no way the utilities could avoid these costs imposed by the Nuclear Regulatory Commission. The construction and operation of nuclear power plants has been preempted by federal law in the form of the Atomic Energy Act. In *Northern States Power Company v. State of Minnesota*, 447 F.2d 1143, 1154 (8th Cir. 1971), the court said:

> "[W]e hold that the federal government has exclusive authority under the doctrine of pre-emption to regulate the construction and operation of nuclear power plants, which necessarily *includes* regulation of the levels of radioactive effluents discharged from the plant." (Emphasis added.)

The United States Supreme Court in *Pacific Gas & Elec. v. Energy Resources Comm'n*, 461 U.S. 190, 75 L. Ed. 752, 103 S. Ct. 1713 (1983), held broadly that "the Federal Government has occupied the entire field of nuclear safety concerns," and that "the NRC [has] exclusive authority over plant construction and operation." 461 U.S. at 212. Regulation in the field of the traditional state area of utility rate regulation may not stand when, as here, it transgresses upon areas reserved to the federal government. While the KCC is not required to value the Wolf Creek facility at the value requested by the utilities, the KCC must not preclude a return on costs required to comply with federally mandated nuclear safety regulations.

Indirectly, the KCC by deducting from the rate base its determination of "excess economic capacity" has refused to honor the costs attributable to federal preemption.

Obviously, a conflict exists between the KCC's orders and the prior decision of the NRC that the Wolf Creek facility would be needed. Fuel diversity was needed when the Wolf Creek facility was planned.

If the orders of the KCC are upheld in this case, potential owners of future nuclear power plants will choose not to build such plants because they will not be permitted to recover the costs mandated by the federal government's nuclear safety regulations. This prospect clearly stands as an obstacle to the important federal goals found in the Atomic Energy Act of encouraging the development of nuclear power and the goal of encouraging the use of fuels other than oil and natural gas found in the Fuel Use Act.

Directing attention to the admission of the KCC that the initial decision of the utilities to construct the Wolf Creek facility was a prudent decision, it is inconceivable the KCC would not have issued a siting permit for the plant's construction had such permit been required.

Where a siting permit has been issued by the KCC, a finding of lack of prudence in capacity planning for a facility which in whole or in part represents excess capacity *shall not be made.* Reasonable action by the KCC should have taken this into consideration. The KCC smugly states in its brief, however, that no siting permit was issued. Furthermore, authorization of the KCC under K.S.A. 66-128e to exclude from value of utility property for rate-making purposes that portion of the costs attributable to investment in excess capacity, which were incurred due to *lack of prudence in facility planning,* has no application in this case. The entire cost of the Wolf Creek facility attributable to Kansas was found to be prudent, except for the 10% found to be imprudent. Findings by the KCC in determining the base in this case are clearly inconsistent.

The perfect hindsight approach taken by the KCC to support its orders was taken from the testimony of its expert witness, Dr. Richard A. Rosen.

On cross-examination Dr. Rosen said his research firm was very new to the field of nuclear economics; that it only started to consider nuclear economics in 1980. He testified that everywhere they turned at that time they found a tremendous lack of research. He testified the planning and decision-making process of the utilities concerning the Wolf Creek facility was seriously inadequate and at the end of 1981 the reasonable and prudent course of action for the utilities should have been to abandon the project; that the losses incurred after 1981 should be borne 100% by the shareholders; and that the losses that occurred prior to 1981 should be shared 50-50 between the shareholders and the ratepayers. Actually, abandonment of construction prior to completion of the Wolf Creek project is academic because the project was never abandoned.

Dr. Rosen's statements are amusing because, according to case law, had the project been abandoned the total

expenditures for the first five years of construction would have been "sunk costs." That is, the investors would not be permitted to recover either income on or return of their capital investment under the law in some states. *Citizens Action v. Northern Indiana Public*, 485 N.E.2d 610 (Ind. 1985); *Dayton Power Light Co. v. Pub. Util. Comm.*, 4 Ohio St. 3d 91, 447 N.E.2d 733 (1983).

The specific *after the fact* test proposed by Dr. Rosen violates the well-established rules for determining the prudence of management decision-making. His proposal violates basic tenets of fairness by radically altering the "rules of the game" after the investors' funds have been committed.

Cases relied upon by the KCC to support its deduction of "excess economic capacity" from the rate base and burden the investors with these excess economic costs do not support its action. The KCC contends the investors assumed these risks under its authority to allocate such risk to them. The "risk-sharing" cases cited by the KCC fall into one of four categories, none of which concerns excess economic capacity—abandoned or cancelled plant, plant that is not used and useful, legislative caps on nuclear investment, and plant failure.

The KCC argues the utilities are not denied recovery of capital expenditure on those costs deducted from the rate base for "excess physical capacity" and "excess economic capacity" because the utilities will be permitted to recover these costs by an annual depreciation allowance over the life of the Wolf Creek facility. This is misleading. In the KCC order the following is stated:

> "We find that some carrying costs associated with the debt and preferred stock costs of capital should be accrued. Such carrying costs, however, should only be those associated with the portion of Wolf Creek excluded on a physical excess capacity basis

valued at the same economic value as the portion included in rate base."

A regulatory body may not arbitrarily use the asserted, lower costs of a fictional facility instead of the historical cost of an actual facility in assigning a value to the facility in question for rate base purposes, particularly where that is done selectively to achieve the lowest possible rate base. The KCC cites no cases whatsoever where the concept of risk sharing, or any other concept, was used to justify hypothetical coal plant revaluation of a nuclear generating facility.

The Iowa State Commerce Commission, upon Union Electric Company's application for a rate increase based on the Callaway nuclear plant in Missouri, was faced with the argument that there were cheaper cost alternatives to a nuclear plant, such as a coal-fired plant, and only the cost of the lower-cost alternative should be allowed in the rate base. *Re Union Electric Co.*, 72 P.U.R. 4th 444, 450 (Iowa 1986). There the Commission responded and held:

> "The evidence showed that when the Callaway project was planned in the 1970's, a nuclear plant was a reasonable alternative. Union Electric's choice to 'go nuclear' was prudent when made. Now that a nuclear plant has been completed, Union Electrict should be allowed to collect rates consistent with the operation of a *nuclear* plant, rather than some other type of plant. Attributing the cost of an alternate type of generating plant to the Callaway plant is *illogical*." (Emphasis added.)

See also *In the Matter of the Application of Southern California Edison Company before the Public Utilities Commission of the State of California*, Application 85-05-144 (December 18, 1985), rejecting the question of retroactive "value based" rate making relating to the Palo Verde Nuclear Generating Station.

Without any precedent for its revaluation, the KCC asserts that it has properly allocated to the investors the "risk" that Wolf Creek construction costs would exceed that of a coal plant. But the investors in the Wolf Creek facility did not "assume the risk" of any unprecedented, arbitrary denial of a return on precedent construction costs of used and usable Wolf Creek capacity, merely because they exceeded the construction costs of a coal plant of the same size.

Imputing imprudent construction costs of 10% to KEPCo is, in my opinion, erroneous. KEPCo buys electrical energy at wholesale, having no generating facilities of its own. The lines over which electricity is supplied to the various cooperatives in KEPCo are owned by KG&E. KG&E would not supply electricity to KEPCo unless KEPCo brought into the Wolf Creek facility. Therefore, KEPCo had no choice if it was to continue supplying electricity to its cooperatives. Furthermore, in KEPCo the consumers of electricity are the owners of the Cooperative. Therefore, shifting the risk to the investors is simply shifting the burden to the consumers.

It is respectfully submitted the orders of the KCC should be reversed and the case remanded to the KCC for the establishment of just and reasonable rates.

APPENDIX B

Denial of Rehearing by Kansas Supreme Court

IN THE SUPREME COURT
OF THE STATE OF KANSAS

No. 85-58914-A S
85-58917-A S
85-58918-A S

KANSAS GAS AND ELECTRIC CO.,
Applicant

v.

STATE CORPORATION COMMISSION OF THE
STATE OF KANSAS,
Respondent

You are hereby notified of the following action taken in the above entitled case:

Motion for rehearing.

Motion for rehearing denied.

Yours very truly,

LEWIS C. CARTER
Clerk
Supreme Court

Date July 17, 1986

APPENDIX C

Order of the Kansas Corporation Commission (KG&E)

THE STATE CORPORATION COMMISSION OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman
Margalee Wright
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGTON, KANSAS

Docket No. 142,098-U
84-KG&E-197-R

IN THE MATTER OF THE APPLICATION OF KANSAS GAS AND ELECTRIC COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICES

ORDER

NOW, the above-captioned matters come before the State Corporation Commission of the State of Kansas for consideration and determination of the application of Kansas Gas and Electric Company (KG&E or applicant) for approval of changes in its charges for electric service.

Having considered the evidence and testimony, the files and records and being fully advised in the premises, the Commission's findings and conclusions are set forth hereinbelow.

I. *APPEARANCES*

1. The following parties entered an appearance in the above captioned matters.

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2. Four hundred seventy-seven (477) members of the public appeared on their own behalf and on the behalf of others at nineteen (19) public hearings conducted between June 4 and June 20, 1985. A complete list of those who testified at the public hearings is contained in an attached Appendix.

II. *INTRODUCTION*

1. This Order concerns two interrelated dockets, 120,924-U and 142,098-U, both of which relate to commercial operation of the Wolf Creek Generating Station (WCGS). To determine whether the WCGS was fully operational and dedicated to commercial service the Commission established in-service criteria. The owners of the WCGS, through their operating agent KG&E, affirmed by affidavit the in-service criteria had been satisfied and declared the WCGS to be in commercial service as of 1:16 a.m., September 3, 1985. Staff confirmed by affidavit filed September 10, 1985, that the aforementioned in-service criteria had been satisfied and that the WCGS should be considered in-service at the date and time attested to by the owner utilities.

2. Docket No. 120,924-U was created in 1979 for the purpose of initiating a "general investigation of the projected costs and related matters of the Wolf Creek Nuclear Generating Facility at Burlington, Kansas." One of the primary functions of the general investigation docket was to allow staff to begin collecting data relevant to the anticipated commercial operation of WCGS and the related rate applications so that staff's investigation would not have to be completed within the 240 day suspension period prescribed by K.S.A. 66-177 for the investigation and hearing of rate applications and the issuance of final orders.

3. Docket No. 142,098-U was created on November 8, 1984, upon the filing by KG&E of an application requesting proposed changes in its charges for electric service based upon, *inter alia*, the commercial operation of the WCGS. KG&E amended its application on January 31, 1985. KG&E requested approval of rates designed to increase total company revenue by 144.9 million dollars in 1985. The 1985 rate proposal represents the first of five annual rate increases proposed by KG&E. The annual

revenue increases proposed for the following four years would be the subject of future rate proceedings.

4. KCPL and KEPCo also applied for approval to increase their rates for electric service due to the commercial operation of Wolf Creek. Docket No. 142,099-U was created on November 8, 1984, upon the filing by KCPL of its rate application requesting proposed changes in its charges for electric service based upon, *inter alia*, the commercial operation of Wolf Creek. KCPL amended its application on January 31, 1985. Both the original and the amended application request Commission approval of a one time increase in revenues of 90.5 million dollars, or, in the alternative, a 110.6 million dollar rate increase to be phased in over a four year period.

5. Docket No. 142,100-U was created on November 14, 1984, upon the filing by KEPCo of its WCGS rate application. KEPCo filed an amended application on February 1, 1985. In its application, KEPCo requested a $26,984,410 increase in annual revenue, representing approximately a 40 percent increase in revenue presently collected from KEPCo's member distribution cooperatives. The Commission's findings with regard to Docket Nos. 142,099-U and 142,100-U are set out in separate orders.

6. As noted, the above-referenced applications for rate relief and the general investigation are based primarily upon the investment in, and the commercial operation of the WCGS. Thus, there are issues common to all of the above referenced dockets. In an Order dated March 29, 1985, the Commission found six Wolf Creek related issues were to be designated common issues to be heard on a common record in accordance with K.A.R. 82-1-224(a). The six issues were identified as follows:

(1) the reasonableness of the cost, acquisition and construction of the Wolf Creek generating station including, but not limited to, a comparison

of the actual cost with the definitive or original cost estimate;

(2) the reasonableness of the cost of operation of Wolf Creek including overhead, maintenance, personnel, appropriate depreciation rate and increased insurance costs;

(3) determination of the appropriate methods of waste disposal and decommissioning and the reasonableness of the respective costs;

(4) all issues relating to the use of nuclear fuel and the status of the licensing of Wolf Creek;

(5) whether the collective management decisions to construct and the collective management decisions to continue construction on a year to year basis were economically prudent; and

(6) whether any portions of cost of acquisition, construction or operation of Wolf Creek were incurred due to lack of efficiency or prudence, including, but not limited to, consideration of those factors to be considered pursuant to K.S.A. 1984 supp. 66-128g(a).

7. In addition, the issues of excess capacity or the need for power, as they relate to one or more of the six issues set forth above, are common issues properly presented either on the common record or on the record of the company specific docket. Furthermore, any other issues not specifically identified but which relate to, or bear upon, the six issues enumerated above may be presented as part of the common record.

8. Consistent with the identification of common issues, in an order dated August 13, 1985, the Commission concluded Docket Nos. 120,924-U, 142,098-U, 142,099-U and 142,100-U would be consolidated pursuant to K.A.R. 81-2-224(a) for the purpose of hearing evidence concerning the common issues on a common record.

9. The scope of this order is limited to the Commission's findings with regard to the common issues addressed in Docket No. 120,924-U and 142,098-U jointly and the KG&E specific issues addressed in Docket No. 142,098-U. Issues identified and addressed by the Commission in its deliberations concerning the common issues of Docket No. 120,924-U and 142,098-U include:

(1) the efficiency and prudence of the Wolf Creek acquisition/construction process;

(2) excess generating capacity;

(3) the reasonable value of Wolf Creek capacity;

(4) the decommissioning of a nuclear power plant;

(5) Wolf Creek operating and maintenance expense;

(6) Wolf Creek depreciation rate;

(7) performance standards;

(8) the need for appropriate funding for payment of dividends during the construction of Wolf Creek;

(9) the appropriate ratemaking treatment of fines and penalties relating to Wolf Creek;

(10) an examination of a leasing arrangement for nuclear fuel; and

(11) the need for periodic reporting concerning load growth equivalent availability, capacity factor, operating and maintenance costs, decommissioning estimates, forced and scheduled outages and insurance coverage.

10. With regard to the issues specifically related to KG&E's rate application, through direct testimony and cross-examination, staff and applicant took opposing positions in the following areas: the nature of the rate relief; the inclusion of the Jeffrey Energy Center Unit No. 4

Turbine Generator in the rate base as a part of the spare part inventory for Jeffrey Units 1 through 3; the flow-through of the benefit of the interest expense deduction attributable to excluded Wolf Creek rate base, the inclusion of the ad valorem tax expense associated with any excluded Wolf Creek plant in the KG&E cost of service; the proper level of expense related to the operation and maintenance of LaCygne Generating Stations Units 1 and 2; phase-in of the rate increase; the value of SWPA power in the allocation process for generating municipals and KEPCo; the value of Generating Municipal owned generating plant; and the revenue requirements for KG&E.

11. The hearing of common issues in Docket No. 120,924-U and 142,098-U commenced May 13, 1985, at the Kansas Statehouse, Old Supreme Court Chambers, Third Floor, Topeka, Kansas. KG&E company-specific rate issues in Docket No. 142,098-U were called for hearing on July 15, 1985, and concluded July 22, 1985.

12. A complete list of witnesses called to testify on behalf of the applicants, staff and intervenors in Docket Nos. 120,924-U and 142,098-U is attached hereto as an Appendix. The Commission also heard testimony from ratepayers at public hearings conducted at the following times and locations:

June 4	Wichita 9 a.m. 1-7 p.m.	Century II Complex 225 W. Douglas
June 5	Wichita 9 a.m. 1-7 p.m.	Century II Complex
June 6	Lindsborg 1 p.m.	Bethany College
June 6	Newton 7:30 p.m.	Bethel College North Newton

June 7	Meade 1 p.m.	Veterans' Bldg. 115 E. Belle
June 7	El Dorado 7 p.m.	Butler Cty. Comm. College 901 S. Haverhill Rd.
June 10	Topeka 7 p.m.	Capitol Bldg. 3rd Floor-Room 313 S
June 11	Paola 7 p.m.	Paola High School 405 N. Hospital Drive
June 12	Pittsburg 7 p.m.	Pittsburg Memorial Auditorium 503 North Pine
June 13	Overland Park 9 a.m. 1-7 p.m.	Johnson Cty. Comm. College 12345 College Blvd.
June 18	Iola 7 p.m.	Bowlus Fine Arts Center 205 East Madison
June 19	Independence 7 p.m.	Memorial Hall Civic Center (Basement) Locust & Penn Ave.
June 20	Beloit 7 p.m.	Municipal Bldg. 119 North Hersey

The record was closed upon the filing of briefs by the parties August 30, 1985, and receipt on September 16, 1985, of staff's affidavit regarding commercial operation.

III. *JURISDICTION AND NOTICE*

1. The Kansas Corporation Commission has the power and authority to require all public utilities doing business in Kansas to provide reasonably efficient and sufficient service and to establish and maintain just and reasonable rates. K.S.A. 66-107. Unless the State Corporation Commission otherwise orders, no common carrier or public utility over which the Commission has control shall make effective any changed rate, or rates of such public utilities or common carrier, except by filing the

same with the Commission at least 30 days prior to the proposed effective date thereof. K.S.A. 66-117. The State Corporation Commission has the authority to review and evaluate the efficiency and prudence of any action, including acquisition of excess capacity, or operating practices of any public utility or common carrier for the purpose of establishing fair and reasonable rates. K.S.A. 6-128a. An order of the Commission establishing just and reasonable rates must be based upon substantial competent evidence. *Jones v. Kansas Gas and Electric Company*, 222 Kan. 390 (1977).

2. KG&E is a corporation organized and existing under the laws of the State of Kansas with its principal place of business at 201 North Market Street, Wichita, Kansas. KG&E is an electric public utility within the meaning of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric service at retail for domestic, commercial, and industrial uses in the State of Kansas.

3. KCPL is a corporation organized and existing under the laws of the State of Missouri, with its principal place of business located at 1330 Baltimore Avenue, Kansas City, Missouri. KCPL is an electric public utility within the meaning of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric service at retail for domestic, commercial and industrial uses in the State of Kansas.

4. KEPCo is a corporation organized and existing under the State of Kansas with its principal place of business located at 5990 Southwest 28th Street, Topeka, Kansas. KEPCo is an electric public utility within the meaning of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric services at wholesale

to tweny-five rural electric cooperative members in the State of Kansas.

5. The following parties were granted leave to intervene in Docket Nos. 120,924 and/or 142,098-U: Kansas Natural Resource Council; Boeing Military Aircraft Company; Cities of Wichita, Clearwater, Derby, Goddard, Garden Plain, Overland Park, Olathe, Lenexa, Shawnee, Merriam, Countryside, Mission, Roeland Park, Whitewater, Potwin, Kechi and Cheney, Kansas; Alliance for Livable Electric Rates (ALERT); Electric Shock Coalition; United States Air Force; Robert T. Stephan, Attorney General of the State of Kansas; Conoco, Inc.: Kansas Independent Oil and Gas Association (KIOGA); Kansans for Sensible Energy; Vulcan Materials Co., Chemical Division; Johnson County Board of Commissioners; Johnson County Community College; Hospital and Industrial Group; KPL/Gas Service; Blue Valley Unified School District No. 229; Johnson County Commercial & Industrial Energy Consumers; Olathe Unified School District; Shawnee Mission School District No. 512; Vulcan Materials; Electro Dynamics, Inc.; NCK Electric Cooperative; Mary Margaret Rogers; and the Wichita Area Chamber of Commerce.

6. KG&E verified that it published notice of hearing in Docket Nos. 120,924-U and 142,098-U in 43 newspapers of general circulation in the KG&E service area between the dates of March 27 and April 4, 1985. In addition, notice was posted in a conspicuous public place in KG&E's business offices in Kansas. Notice was also served by direct mail to each party of record in Docket Nos. 120,924-U and 142,098-U; by direct mail to each intervenor in KG&E's last rate proceeding before this Commission, Docket No. 136,380-U; and commencing March 12, 1985, and continuing through April 10, 1985, by mail to all of KG&E's Kansas customers as an insert in the regular monthly bills sent to those customers.

7. Notice of the pendency of the above-referenced applications, the general investigation and the hearings conducted with regard thereto having been given, the Commission finds notice reasonable and proper. Further, the Commission finds that it has jurisdiction to hear and decide the KG&E rate application and the issues related thereto.

IV. *EFFICIENCY AND PRUDENCE OF THE WOLF CREEK ACQUISITION/CONSTRUCTION PROCESS*

A. *INTRODUCTION*

1. In valuing utility property for ratemaking purposes, if the Commission determines that all or a portion of the costs of acquisition, construction, or operation of a generating facility were incurred due to a lack of efficiency or prudence or were incurred in the acquisition or construction of excess capacity, then the Commission may exclude all or a portion of such costs from eligibility for recovery through rates in accordance with K.S.A. 1984 Supp. 66-128c which provides as follows:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquistion, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.
>
> For the purpose of this act, "excess capacity" means any capacity in excess of the amount used and required to be used to provide adequate and reliable

service to the public within the state of Kansas as determined by the commission. The commission may in its discretion prohibit or reduce the return on costs which were incurred in constructing, maintaining or operating excess capacity.

2. In the event that the Commission finds a public utility to have imprudently incurred costs relating to the acquisition, construction, or operation of utility plant or if the Commission finds excess capacity to have resulted from imprudence in facility planning, the Commission may not allow recovery of carrying or financing charges on costs so incurred after the date of its finding. K.S.A. 1984 Supp. 66-128e provides, in pertinent part, as follows:

> In the event the commission finds that a portion of the costs were attributable either to investment in excess capacity which were incurred due to lack of prudence in facility planning or were incurred due to lack of prudence in plant acquisition, construction or operation, the commission shall exclude that portion of the carrying or finance charges incurred after the date of its finding, and no part of the carrying or finance costs excluded shall ever be or become part of the reasonable value of public utility property so used and required to be used. For the purposes of this section only, a finding of lack of prudence in capacity planning for a facility which in whole or in part represents excess capacity shall not be made by the commission when a siting permit authorizing the construction of the facility has been issued under K.S.A. 66-1,162 and amendments thereto prior to the passage of this act. The commission also shall not authorize the recovery as operating expense or in any other manner of the carrying or finance costs so excluded.
>
> Nothing in this act shall limit the commission's authority to adjust revenue requirements of any

public utility if the commission determines the revenue requirement requested results in whole or in part from inefficiency or a lack of prudence.

3. The Commission must consider the prudence "factors" listed in K.S.A. 1984 Supp. 66-128g(a) in assessing whether construction costs were prudently incurred and in determining whether such costs should be recovered through rates.

> The factors which shall be considered by the commission in making the determination of "prudence" or lack thereof in determining the reasonable value of electric generating property, as contemplated by this act shall include without limitation the following:
>
> (1) A comparison of the existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that facility;
>
> (2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;
>
> (3) a comparison of the final cost of the facility under consideration to the final cost of other facilities constructed within a reasonable time before or after construction of the facility under consideration;
>
> (4) a comparison of the original cost estimates made by the owners of the facility under consideration with the final cost of such facility;
>
> (5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

(6) a comparison of any overruns in the construction cost of the facility under consideration with any cost overruns of any other electric generating facility constructed within a reasonable time before or after construction of the facility under consideration;

(7) whether the utility having an ownership interest in the facility being considered has provided a method to ensure that the cost of any decommissioning, any waste disposal or any cost of clean-up of any incident in construction or operation of such facility is to be paid by the utility;

(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

(9) whether inclusion of all or any part of the cost of construction of the facility under consideration, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest of Kansas;

(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

4. In light of these statutes and the general empowering statutes in Chapter 66, we have reviewed the owners' Management Performance Evaluation, Reconciliation Management Summary, and WCGS cost reconciliation and schedule testimony. In addition, we have studied the Touche Ross and Project Management Associates (PMA)

reports, and evaluated the owners' criticisms of these reports. Our assessment of the WCGS costs and construction management follows.

B. *PLANNING, ORGANIZATION AND CONTROL OF THE PROJECT AND ITS COST*

Initial Period (1973-1977)

1. The owners and staff each presented evidence and testimony to evaluate the owners' management performance during the initial phases of the Wolf Creek project. The witness for the owners, Mr. Charles L. Huston, asserted in his testimony and Exhibit G-KGE-1, that the owners' decision to join the nuclear power plant standardization group, or SNUPPS, was the "most significant event of the entire project." Because of this association, asserts Mr. Huston, the owners were able to avail themselves of the knowledge of other utilities with experience in constructing nuclear power plants and to accrue savings in engineering, licensing and procurement, as well as other areas. (Exhibit G-KGE-1, Schedule 1, p. 10). Staff witness Thomas J. Flaherty came to the same conclusion in his testimony. He stated:

> The advantages available to the Owners from participation far outweigh the potential disadvantages whether considered on an economic or non-economic basis. The ability to spread the cost of design among a number of utilities provides immediate economic benefits that also accrue to the ratepayers. Moreover, the ability to rely on the technical expertise of other experienced and participating utilities serves to increase the knowledge base of the Owners and provides for increasing familiarity over time based on the previous situations similarly experienced by these utilities. This tie-in to a broader network was particularly important given the lack of design, construction or construction management experience of the Owners. (TR. Vol. XVII, p. 4790).

Mr. Flaherty further acknowledged the positive effects of the decision to join SNUPPS when he discussed the savings in cost and schedule that resulted from the reduction of design hours and licensing effort by spreading the cost over a number of plants. (TR. Vol. XII, p. 4905-4906).

2. Witnesses for the staff and owners agree that the owners' selection of major contractors was appropriate. Mr. Huston discussed the selection of the major architect/engineer and the engineering management of the project in Chapter III of the "Management Performance Evaluation." (Exhibit G-KGE-1). He observed that:

> The SNUPPS utilities selected Bechtel Power Corporation based upon its having the greatest amount of nuclear project engineering experience of any firm in the industry and the strength of its proposed project team. Executive management committed by Bechtel to the SNUPPS project was strong. (Exhibit G-KGE-1, p. 50).

Mr. Flaherty testified that while the evaluation process for the selection of the lead architect/engineer was limited, the "selection of Bechtel resulted in obtaining the largest and most experienced architect/engineer in the nuclear power industry." (TR. Vol. XVII, p. 4792). Mr. Huston described the selection process for choosing the major site constructor, Daniel International Corporation (DIC), in Chapter VI of Exhibit G-KGE-1. Mr. Flaherty evaluated that process in his report. He concluded that:

> The evaluation and selection process used by the Wolf Creek owners was comprehensive in scope and gave appropriate consideration to economic, experience and capability factors. The evaluation and selection process employed included an assessment of the strengths and weaknesses of each organization.
>
> * * * * *
>
> The selection of DIC as the constructor for the Wolf Creek project was reasonable and prudent based on

> the information available to the Wolf Creek Owners. The selection process was comprehensive in scope . . . and involved the scrutiny of senior management of the Owner utilities. (Exhibit G-Staff-63, p. VI-27 and 28).

Staff witness Flaherty's findings relative to the selection of the contractor for the nuclear steam supply system and the turbine generator supplier were that the selection processes were comprehensive and thorough. (Exhibit G-Staff-63, p. VI-29 and 30). He summarized his findings regarding the owners' efforts in contractor selection in his testimony:

> In each case, multiple bidders were requested to participate in the bidding process and were thoroughly evaluated on both objective and subjective bases. Home office or other site visits were made to further evaluate submitted material. Although the process for selection of Bechtel as the lead A/E was significantly less comprehensive, the overall process followed for selection of major vendors and contractors was appropriate and was conducted with thorough consideration of a wide variety of factors. (TR. Vol. XVII, p. 4792).

3. During the early stages of the project, the company adopted an overall management philosophy described as construction "monitoring" by both staff and owner witnesses. Staff witness Flaherty asserted that the initial philosophy could be characterized as "that of contractor monitoring and rendering approval or denial to contractor recommendations." (TR. Vol. XVII, p. 4791). Mr. Huston discussed the owners' early construction management philosophy in his exhibit:

> The initial concept [of construction management] was to have one contractor serve as the Construction Manager of all site activities with *limited* Owner involvement . . . (Emphasis added). (Exhibit G-KGE-1, Schedule 1, p. 167).

Mr. Flaherty asserted that this approach to managing the Wolf Creek Generating Station was inadequate:

> The initial management philosophy as apparently developed did not provide the necessary emphasis to the project management function. Given the size and complexity of the proposed project, a more structured and stronger approach toward management of the contractor effort would be necessary to provide the level of oversight commensurate with potential risks. This was particularly true in light of emerging trends and conditions with respect to nuclear power and the lack of relevant experience of the Owners. (Exhibit G-Staff-63, p. VI-14).

Mr. Flaherty attributed the inadequacy to the owners' lack of understanding of the nature of the project:

> . . . the Owners did not fully appreciate the complexity and magnitude of the task facing them in the design, licensing, and construction of a nuclear generating facility. Relying on the same management approach which had been used in the past to support the construction of gas/oil-fired generating facilities was insufficient for directing a nuclear construction program. (TR. Vol. XVIII, p. 4797).

In Mr. Flaherty's opinion, the effect of the owners' "monitoring" role was reflected in subsequent inefficient performance by the prime construction contractor:

> . . . the initial level of management involvement was not sufficient enough to support . . . effective project management. With a greater level of involvement earlier in the project it is likely that some of the problems experienced related to DIC performance and overall project progress could have been avoid (sic) or mitigated. (TR. Vol. XVII, p. 4799).

4. The form of the contract between the constructor and the owners for the plant was addressed by the owners

as well as the staff. Witnesses for the owners and staff testified that industry practice for construction of nuclear power plants had dictated the use of a cost-plus type contract by the owners. In his report, Mr. Flaherty stressed the importance of the owners' direct involvement in administering cost-plus type contracts and asserted that:

> Given the high level of financial commitment to Wolf Creek, a more extensive and experienced project construction organization should have been established at project inception. Not only would this additional monitoring capability provide an organization to better challenge claims for increased cost or schedule delays by various vendors or contractors, but it would have provided the top management of the Owners a better understanding of project problems, etc., which would have facilitated the comprehensiveness and the timing of corrective management actions by the Owners. (Exhibit G-Staff-63, p. VII-19).

5. The Commission finds that management performance in the initial stages of the project was reasonable and appropriate in the selection of major contractors and in the decision to participate in the SNUPPS organization. However, the Commission finds that inherent problems arose from the management philosophy adopted by the owners in the early years. The evidence is persuasive that the owners neither defined nor understood the scope of the project. We find that the monitoring role was inefficient, ineffective, and inappropriate under the circumstances. The owners' initial philosophy led to management inefficiencies and ineffectiveness and contributed to poor contractor performance during certain phases of the project. The lack of effective, efficient management on the part of the owners at the outset limited the owners' ability to control costs and schedule to the detriment of the ratepayers.

Early Construction Period (1978-1980)

1. Mr. Huston testified concerning the effectiveness of the owners' management performance during construction of the Wolf Creek Generating Station. He asserts that "the owner and contractors exerted exceptionally strong and effective management and achieved commensurately outstanding results" in some areas. He also asserts that less than outstanding, but still acceptable, performance occurred in areas of labor productivity and overtime. (TR. Vol. I, p. 154). At page 189 of Exhibit G-KGE-1, Management Performance Evaluation, Mr. Huston states, "In 1979 and eary 1980, it was apparent that construction performance was less than required by the schedule and the budget." He then concluded in his testimony that the owners' overall management performance for the project was good. (TR. Vol. I, p. 163). Mr. Gary Fouts, construction manager of the project since 1979, voiced his opinion of the owners' approach to construction management prior to 1980 in his testimony. He testified that since the owners had no prior experience in nuclear construction management, it was proper and reasonable for them to select a contractor (DIC) with nuclear construction experience and entrust that contractor with the overall construction management of the project. He asserted that from the period 1976-1978 there was no need to change the approach, but that the owners increased their involvement in 1979-1980 when construction problems arose and the project entered a more complex phase. (TR. Vol. XXXV, p. 10478-10479).

2. Witnesses for the staff asserted that prior to 1980 construction performance never achieved expected levels. Mr. Flaherty criticized the owners' "monitoring" role, the size of the owners' initial project staff commitments and the level of management involvement. (TR. Vol. XVII, p. 4819). Criticisms of the early phases of construction management were also contained in the 1980 report sub-

mitted to the Commission by Cresap, McCormick and Paget, Inc. That report stated:

> Several factors lead to the consultants to conclude that early phases of construction management were unsatisfactory.
>
> —Owner-utility involvement at the headquarters level was insufficient.
>
> —Staffing of KG&E's construction management organization was grossly inadequate. (Exhibit G-Staff-188, p. V11-26).

3. Witnesses for the owners assert that while problems in construction occurred at Wolf creek as they do at all major construction projects, the owners' responses to the problems were timely and effective. (Fouts, TR. Vol. XXXV, p. 10478; Brown, TR. Vol. XXX, p. 9024; Huston, TR. Vol. III, p. 499-500). Mr. Flaherty contends that the level of management attention was insufficient to diagnose problems soon enough to arrest potentially harmful conditions:

> It's a question of why the problem necessarily surfaced and could it have been diagnosed sooner. (TR. Vol. XVII, p. 4946).
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> • • • •
>
> A more relevant point would be how did the situation get to that particular point, without having been arrested earlier, and that's the kind of thing we're talking about in terms of the lack of project management capabilities in the early years may have precipitated a result of that kind, . . . (TR. Vol. XVII, p. 4957).

Mr. Flaherty pointed out that other consultants, including those employed by the owners, had concluded that the owners' management efforts should have been greater at an earlier point in time. He asserted that in view of

the level of investment, the owners should have placed more emphasis on the project. (TR. Vol. XVII, p. 4875-4876).

4. Special staff witness Lawton C. Mitchell asserted that the owners' management performance was deficient in four respects: a) lack of experience on the part of constructor; b) lack of commitment by the owners and constructor; c) lack of an effective cost control and scheduling system; and d) failure of the constructor to develop an effective quality program. (TR. Vol. XVII, p. 5085-5086).

(a) Mr. Mitchell asserted that more than half of the DIC management and supervisory personnel assigned to Wolf Creek had three years or less nuclear experience when they arrived at Wolf Creek. The combination of the owners' inexperience with the inexperience of the major constructor compounded the difficulty of attaining a degree of effectiveness on a nuclear project. (TR. Vol. XVII, p. 5085).

(b) Staff witness Flaherty asserted in his report that the owners did not adequately staff the project:

> The KG&E Construction Organization was understaffed at the time the Wolf Creek project mobilized for construction. A total personnel complement of only 6 people did not provide adequate coverage to represent the Owners' interests and level of risk associated with the project.
>
> * * * *
>
> The limited number of KG&E construction personnel made monitoring of project costs, schedule, and/or manpower impractical at the time the project fully mobilized for construction. At best, the personnel available would have the resources to deal with the progress of the project on an exception basis only; that is, the Owner personnel would be in a position

> to only deal with problems which were brought to their attention by vendors or contractors. (Exhibit G-Staff-63, p. VIII-18).

Staff witness Mitchell testified that the prime contractor demonstrated a lack of commitment by failing to aggressively recruit and hire nonmanual personnel during the 1979-1980 time frame. (TR. Vol. XVII, p. 5085). In his report, Mr. Mitchell stated that the ratio of nonmanual to manual labor was inordinately low throughout 1979-1980, and he suggested that this low level of nonmanual personnel support could have contributed to poor craft and quality performance during that time period. (Exhibit G-Staff-63, p. XI-15). Mr. Mitchell cited problems that occurred in issuing and implementing procedures, processing reports, interpreting inspection procedures, performing inspections, reporting progress, and planning material and manpower levels for specific work operations. (Exhibit G-Staff-63, p. XI-19 and 20).

(c) Mr. Mitchell testified that the management cost systems used by DIC lacked sufficient data to effectively understand performance or to control costs. (TR. Vol. XVII, p. 5086). He further asserted that the deficiency resulted from a management decision rather than the lack of computer software.

> This is not a function of deficiencies in computer software but the result of a management decision to collect costs at a higher level than that which is necessary to ascertain cost causation. (TR. Vol. XVII, p. 5086).

Cresap, McCormick and Paget, Inc., in its 1980 report to the Commission, asserted that the owners' budgeting process for the project suffered from major deficiencies:

> The Wolf Creek Plant's budgeting process has five major deficiencies:
>
> —weak budget development and review procedures

—inconsistent accounting for budgeted items

—inadequate budget reports

—insufficient performance analysis and follow-up practices

—cumbersome systems that support budget development and control. (Exhibit G-Staff-188, p. IX-11 and 12).

Mr. Mitchell testified further that the scheduling system in place by DIC suffered from the lack of manpower loading. (Exhibit G-Staff-63, p. XI-22). He testified that an owners' control group was established to provide an independent review of costs and schedule delays, but, that the group was not established until 1980. (Exhibit G-Staff-63, p. XI-29 and 30). Cresap, McCormick and Paget, Inc., in its 1980 report to the Commission, identified problems with the scheduling system and stated:

> Inability of the constructor to accurately anticipate manpower requirements has had a number of adverse consequences for project schedule and cost.
>
> * * * *
>
> Some temporary overstaffing has also occurred, and this has resulted in reduced labor productivity. (Exhibit G-Staff-188, p. VII-8).

Mr. Huston, witness for the owners, identified similar problems in his 1979 report to the owners:

> Electrical activities in the DIC CPM had not been leveled with available manpower.
>
> The six-month look-ahead schedule did not contain adequate definitions of various commodities; it did not provide management appropriate information to identify what work needed to be performed or in what sequence the work should be undertaken.
>
> In the quantity tracking system, installation of bulk items was reported as complete prior to accept-

> ance by Quality Control. It should be recognized that significant rework occasionally resulted from these QC inspections. (Exhibit G-Staff-63, p. XI-29).

He testified that the scheduling problem went unsolved for a period of time and that in his judgment, the logic in the schedule should have been corrected earlier. (TR. Vol. III, p. 534). In April 1980, Mr. Huston concluded in a report to the owners:

> . . . The current schedule program provides the data management needs in the civil and major equipment areas but is lacking in the piping, instrumentation, and electrical areas.
>
> The constructor has a CPM program with the capability to define priority schedule activities. However, problems with logic, durations, and completeness prevent it from presenting a total picture of critical project activities.
>
> * * * *
>
> The optimum size work force can work on the proper sequence of activities only when a schedule is prepared that accurately identifies this work sequence.
>
> The Owners need to improve and strengthen their schedule interface with the constructor. (Exhibit G-Staff-5, p. 11).

Mr. Huston continued to voice concerns about the scheduling program in September 1980 (Exhibit G-Staff-6) and in January 1981 when he stated:

> DIC and Startup still have not gotten together and input system restraints into the CPM schedule.
>
> * * * *
>
> Although DIC has worked on their CPM program in recent months, it still suffers from the basic flaw of not having been manpower loaded.
>
> * * * *

DIC has not scheduled instrumentation work and there is still no adequate definition of the scope of work to be done.

* * * *

DIC has not prepared manpower curves which reflect the requirements of the new schedule. It is difficult for DIC to effectively manage their work without them. (Exhibit G-Staff-7, pp. 1 and 2).

(d) Mitchell asserted that DIC failed to develop an effective quality program which led to increased scrutiny of the project by the Nuclear Regulatory Commission (NRC). (TR. Vol. XVII, p. 5086). He further testified that while many of the shortcomings in the program were identified early in the project, similar problems occurred throughout the life of the project. The NRC expressed concern with the owners' management controls and in 1979 threatened the project with a civil penalty if the improvement was not made. (Exhibit G-Staff-63, p. XI-31). The owners were assessed a $40,000 civil penalty early in 1983 for failure to adequately control activities affecting the quality of safety-related systems. (Exhibit G-Staff-63, p. XI-33). Cresap, McCormick and Paget in 1980 identified similar problems with the quality assurance program. (Exhibit G-Staff-188, p. VII 24 and 25).

5. The Commission finds that the owners' management of the project prior to 1981 was clearly inefficient and ineffective. The evidence is persuasive that the monitoring role adopted by the owners was inappropriate, produced ineffective management, and resulted in a lack of project control. The ensuing inefficiencies and lowering of labor productivity are reflected in schedule delays and increased costs that occurred during various periods of construction. The Commission recognizes that there was no realistic alternative to the cost-plus nature of the contract utilized by the owners for construction

of the project. However, the Commission finds that the level of concern and commitment on the part of the owners in this time frame was not sufficient to administer a cost-plus type contract. In view of the nature of the contract, the cost and schedule control systems adopted by the owners were inadequate and did not provide the requisite degree of control.

6. We find that lack of management attention coupled with the lack of efficient, effective management on the part of the owners resulted in scheduled delays and increased costs that could have been mitigated by strong management action earlier in the project.

Mid-years of Construction (1981-1982)

1. Mr. Huston, witness for the owners, asserted that as the project entered the more complex stages of construction (mechanical, piping, electrical, instrumentation and startup work), the owners elected to increase their construction management staff. In addition to the expansion of the on-site staff, the owners removed some portions of work and the contract administration responsibility from DIC. The owners assumed these additional roles as well as that of site construction manager which had previously been assigned to DIC. The owners began to infuse more personnel into direct participation in the construction efforts of the project. (Exhibit G-KGE-1, p. 189-190).

2. Mr. Gary Fouts, construction manager, asserted that problems were identified by the owners early in 1980, that the owners and DIC agreed to change the project management team late in 1980, and accomplished the change early in 1981. (TR. Vol. XXXV, p. 10480). Mr. Fouts stated that during 1981, DIC changed its overall organization from an area to a discipline organization to permit greater concentration and effort in the piping and other areas. (TR. Vol. XXXV, p. 10481). DIC

increased personnel levels in pipe engineering and quality control and made changes in the pipe welding group. As a result, the weld rejection rate decreased significantly in 1981. In 1981, the owners removed instrumentation work from the DIC scope since it had been performed by the piping group with a number of problems. The owners began conducting weekly schedule meetings to track the systems and piping program. In 1982, the owners and DIC utilized a team of industrial engineers to improve piping performance and formed a Piping Task Force to make recommendations for needed changes. As a result, piping performance improved during the last half of 1982. (Fouts, TR. Vol. XXXV, p. 10482).

3. Mr. Fouts testified that the owners had identified problems in the electrical area in 1980 and began to implement changes. The owners and DIC agreed to change personnel and formed a joint task force to improve electrical productivity. Mr. Fouts asserted that electrical performance improved significantly in 1981 so that energization was completed on schedule. In addition, Mr. Fouts asserts, the DIC electrical group worked closely with Bechtel to minimize the schedule impact of the many design changes mandated by regulatory requirements. (TR. Vol. XXXV, p. 10484-10485).

4. In Exhibit G-KGE-1, Mr. Huston enumerated the steps the owners and DIC took to effect changes and improve performance in the period 1981-1982. He stated the owners held detailed meetings with Bechtel and Westinghouse to expedite design changes; requested that EBASCO evaluate the schedule to determine if a second shift would be of benefit; removed two piping systems from the DIC scope and assigned the work to General Electric; established a Construction Completion and Startup Testing Task Force; and established a Quality Control Group in addition to the Quality Assurance Group. (Exhibit G-KGE-1, p. 267-268).

5. Mr. Flaherty testified that the owners responded in timely fashion to problems that began to emerge in 1979. He stated the owners took a firmer stance in dealing with the prime contractors and that consultants and KG&E personnel became much more involved in planning and budgeting, particularly with respect to contractor provided plans and reports. (TR. Vol. XVII, p. 4798-4799). In Mr. Flaherty's management report on Wolf Creek, he states that the owners' construction management organization implemented in 1980 produced a much more effective means of monitoring the constructor's progress and performance. (Exhibit G-Staff-63, p. VII-19).

6. In the staff report, Mr. Mitchell observed that in October 1981, KG&E management had judged the DIC overall management performance to be less than acceptable. The ranking assigned to DIC by KG&E management was 4, based on a scale of 1 to 10, which was considered low enough to warrant its removal from the project. (Exhibit G-Staff-63, p. XI-43). Mr. Flaherty testified that the owners took actions to initiate positive changes in DIC's performance. The actions included replacing certain DIC personnel, encouraging DIC to perform more responsibly and to more aggressively manage certain activities, and to remove certain portions of work from DIC's area of responsibility. (TR. Vol. XVII, p. 4958).

7. The Commission finds that in some instances the owners' management of the project began to improve in 1980 and that definite improvement in management performance was apparent from 1981-1982. The evidence clearly indicates that as the owners abandoned a passive role and began to aggressively manage the project, improvements in performance occurred. The increase in the level of commitment on the part of the owners through the assignment of a construction manager, the increase in the size of the owners' on-site staff, the de-

cisions to change some Daniel personnel, and the increase in Bechtel's on-site liaison staff provided much-needed stimulus for positive change. The management inefficiency and ineffectiveness that had been apparent in earlier periods began to dissipate once the owners began to assert positive and aggressive control of the project.

Completion Stage (1983 to present)

1. Mr. Huston described the owners' actions to maintain improved performance at Wolf Creek. In response to overall construction deterioration in the first quarter of 1983, the owners required DIC to replace several members of top management at Wolf Creek. Mr. Huston asserts that the owners hired a Project Director experienced in completing nuclear projects and injected owner personnel in contractor organizations where improved performance was needed. (Exhibit G-KGE-1, p. 269). In addition, the owners placed a limit on overtime which was adversely affecting productivity; required that Westinghouse replace its project manager; and requested that Bechtel increase its site liaison staff to facilitate engineering resolutions of problems on critical activities. (Ibid., p. 269). He stated that by the end of 1983, construction had turned over to Startup most of the critical systems, except for a number of hardware and software items on these systems, and that increased management emphasis was placed on completion of those items.

2. Mr. Fouts stated the owners continued their efforts to optimize piping performance in 1983 by forming a Document Review Task Force to facilitate document review, and by infusing owner personnel into the DIC piping organization. (TR. Vol. XXXV, p. 10483).

3. Mr. Wilson Cadman, Chief Executive Officer and President of KG&E, asserted in his testimony that in November 1983:

> . . . we were coming down the wire with a plant that was well under way, minimum trouble. We looked

> at our ability to continue the financing of the plant and we set ourselves to the task of determining the way that we could bring the plant in with whatever restructuring of management was necessary, whatever steps had to be taken, and keeping in mind the foremost direction of the company and our policy, our stated policy, on the construction of Wolf Creek to bring that plant in safely and as nearly as reasonable as a contemporaneous plant could be built. (TR. Vol. X, p. 2797).

He testified concerning the management effort in July 1984:

> Our energies were turned to the management of the plant, continuing to adjust to the ever increasing requirements of completion and to bring on to the site whatever levels of management with new forms of expertise that could be found anywhere in the world to do that job. (TR. Vol. X, p. 2798).

4. Mr. Mitchell, special staff witness, observed improved performance during this time frame in the resolution of nonconformance reports:

> The timing of NCR resolution was slow in the early years of the project (1977 through 1980). Improvement was noted beginning in 1981 with the most significant results being achieved in 1983 and 1984. This time period coincides with the time period in which revisions were made to DIC procedures to improve the tracking of discrepancies. (Exhibits G-Staff-63, p. XI-42).

5. Mr. Flaherty, special staff witness, testified that in the later stages of the project:

> . . . the owners appeared to have a more thorough and comprehensive understanding of the project complexity, a deeper appreciation of project require-

ments, and a greater commitment to more active involvement in project management. This was evidenced by a revamping of the project management organization, acquisition of more and more experienced personnel, and renewed dedication to effective project leadership and management. (TR. Vol. XVII, p. 4820).

In his report, Mr. Flaherty described the level of management participation during the completion phase of the project:

> The level of direction and participtation has continued to increase to the point now where KG&E employees and/or contractors have been secunded directly into the DIC organization, with the concurrence of DIC management, in order to expedite completion of the project. Highly experienced nuclear personnel have been brought in during the last 1-2 years. (TR. Vol. XVII, p. 4799).

6. Mr. Huston stated that fuel load began at Wolf Creek on March 12, 1985. (Exhibit G-KGE-175, RGS-0103, p. 2).

7. Mr. James Haines, Counsel for Kansas Gas and Electric, announced that the Wolf Creek Generating Station went critical at 7:45, May 22, 1985. (TR. Vol. VIII, p. 2008).

8. The Commision finds the evidence persuasive that during the final stages of the project, 1983 to present, the owners sought to continue the improved management performance that had been attained in the prior period from 1981 thruogh 1982. Through an increased level of commitment and attention to project needs, the owners achieved a higher degree of management effectiveness which had been lacking in the prior phases of the project. The Commission further finds that the increased efforts resulted in commensurately favorable progress and achievement in the completion stage of the project.

C. *QUANTITATIVE ANALYSIS—COST*

1. In the Management Performance Evaluation, the owners presented a comparative analysis of Wolf Creek utilizing a narrative, supplemented by charts, to compare certain variables regarding schedule and costs at Wolf Creek to similar variables at other nuclear power plants. The owners contend that their analysis presents the most objective evidence of the effectiveness of management performance at Wolf Creek. We find, however, that the owners' analysis is flawed by limitations in the survey methods used to obtain data, that in some instances the data were incomplete, misleading, or irrelevant, and do not support the owners' conclusions. We reject the suggestion that comparisons of statistical data provide proof of the quality of management performance at any project. The statistics merely offer numerical comparisons of certain variables and do not provide evidence of prudent management action or guidance to direct and control the project or to mitigate potentially harmful situations.

2. Another method used by the owners to determine the prudence of the costs incurred at Wolf Creek was to analyze in detail the reasons for the manhour and cost increases. A reconcilation group consisting of employees of Bechtel, Daniel and KG&E provided this analysis for the owners by first attempting to reconcile the cost and manhour overruns between the Definitive Estimate and the 1983 Forecast. A second major reconciliation effort was undertaken to reconcile manhour and cost overruns between the Definitive Estimate and the 1985 Forecast. Due to the owners' belief that the 1983 reconciliations were not complete and contained many errors, the 1985 reconcilation effort utilized different methodologies to analyze the manhour and cost overruns. The owners contend that the 1985 reconciliation contained updated information and reconciled every manhour increase from the definitive estimate. The reasons cited and

quantified in the 1983 Forecast and 1985 Forecast reconciliation packages are summarized into broad categories in the owners' Reconciliation Management Summary, an exhibit presented by the owners' witness, Charles Huston. In addition to the original 1983 and 1985 Forecast Reconciliations, the owners prepared an "updated" reconciliation to the 1983 Forecast. This reconciliation basically assigns the same reasons for the variances which were identified in the 1985 Forecast and uses 1983 actual quantities or prorates the reasons to reconcile the 1983 Forecast variance. The owners contend that based on their reconciliation efforts, all manhour and cost increases were prudently incurred. However, we note that the owners' witness Huston identified at net 1,866,000 manhours due to lower than average productivity in the construction of WCGS. This increased total project cost by $28,359,000. (Exhibit G-KGE-1, MPE, p. 250).

3. We have examined the owners' reconciliation analyses. We find that the cost tracking system in place at Wolf Creek was not sufficiently developed and utilized to permit the identification and quantification of the causes for manhour variances in many instances. The cost tracking system contained obvious inadequacies by its failure to capture costs at a detailed level and also its failure to identify reasons for costs overruns at a broader level. For example, the reconciliation group was unable to ascertain, from the project's cost tracking system, the actual amount of payroll taxes and insurance included in the 1985 Forecast for a particular area. Also, the cost tracking system lacked the capability to determine unit rates in certain areas. The owners alleged that a cost system to precisely track every reason for every increased manhour would not have been cost beneficial. They estimated the cost for such a system at $200 million. This amount was calculated by taking 10 percent of the projected project cost minus AFDUC. (Fouts, TR. Vol. XXXV, p. 10516). We find that estimating the costs of

a cost system in this manner does not produce a reliable estimate for such a cost system. We also find that the owners failed to adequately analyze other alternatives for designing and implementing a cost system which would provide reliable data to document and quantify the causes of overruns. We believe the owners acted imprudently in not developing and utilizing a cost tracking system which would enable the owners to accurately identify and quantify causes for overruns. This is an essential responsibility for the owners due to the nature of the cost plus contract negotiated with Daniel International Corporation, the constructor.

4. The owners' inadequate cost tracking system resulted in a lack of substantive historical cost data to support the reconcilation process. Therefore, the reconciliation group was often required to "fill the gaps" by using Order of Magnitude estimates to quantify the causes for manhour and cost overruns. We believe these estimates utilized methods which failed to adequately support the identification and quantification of such overruns.

5. One method used extensively throughout the reconciliation to the 1985 Forecast was the quantification of manhours by subtraction. Under this method, a large number of manhours were reconciled with no supporting documentation, and other reasons which contributed to the manhour variance were concealed at the owners' discretion. Interviews were also relied upon extensively in the 1983 and 1985 reconciliation packages, often without any other supporting documentation. Sometimes interview information was ignored by the Reconciliation Group although it may have been corroborated. Contrary to the owners' assertions, we find that not all manhours were adequately reconciled in the 1985 Forecast reconciliation and updated 1983 reconciliation. This is due to the widespread use of the subtraction method and because unreconciled manhours were often reclassified by other

terms such as "remaining activities." It is also our finding that some of the methods employed in the reconciliation process were too simplistic to provide meaningful estimates.

6. We also find that it was not the purpose of the Reconciliation Group to determine the prudence of manhours and cost overruns. Charles Linderman, the manager of the Reconciliation Group, testified that the group did not possess the qualifications to determine if the overruns were imprudently incurred. We conclude that the owners' reconciliations of cost and manhour overruns fail to reliably and accurately assess the causes for such increases.

7. Project Management Associates (PMA), serving as special staff, prepared an independent analysis of the manhour increases between the Definitive Estimate and the 1983 Forecast. PMA analyzed cost overruns in the following nuclear cost categories:

(1) piping and whip restraints;

(2) mechanical systems;

(3) heating, ventilating and air conditioning systems;

(4) electrical systems and instrumentation;

(5) structural steel;

(6) special finishes;

(7) site work; and

(8) concrete.

8. PMA recommended that 4,036,723 manhours be disallowed because they were either imprudently incurred, unreconciled, or were attributable to causes which were controllable by owner management, and that the value of the WCGS plant be reduced by $82,570,600, for ratemaking purposes, to reflect such disallowance.

9. The methodology employed by PMA in quantifying unreasonable overruns consisted of three major steps. First, the definitive estimate and the 1983 forecast were analyzed in detail in order to identify quantities, unit manhour rates, and reported percentages of completion at the time the 1983 forecast was developed. Second, indicators of cost performance disclosed by the owners' "Reconciliation Packages", responses to data requests, and a study of design change documents and extra work items were analyzed to identify reported or potential events which would represent causes for overruns. Third, PMA conducted a study to quantify the manhour overruns which could be attributed to causes of cost increases singled out. In most instances the development by staff of a completely independent estimate of the impact of specific cost causation was required due to inaccuracies in the approach of the owners' reconciliation packages or due to deficiencies in Daniel's cost control system. PMA was unable to reconcile all of the manhour overruns due to deficiencies in Daniel's cost control system and the inadequacies of the owners' reconciliation packages. PMA recommended disallowance of all such unreconciled manhours.

10. The owners presented evidence in their rebuttal testimony to refute the disallowances recommended by PMA. We find that PMA utilized sound methodology and that generally PMA's manhour and cost disallowances are supportable. We have examined each PMA proposed disallowance as well as the owners' rebuttal to it. With the following exceptions, we find PMA's analysis and recommendations reasonable and proper. The following contentions of the owners have merit. Therefore, we find PMA's recommended manhour and cost disallowance should be adjusted as follows:

(A) Piping Area:

(1) PMA incorrectly used quantities to pro-rate manhours to develop their manhour reconciliation

for capping and uncapping welds. The effect of this adjustment is to reduce PMA's disallowance by 349,131 direct manhours and $7,561,900 in direct and indirect costs.

(2) The owners' cleanliness program was necessary and not overzealous in the piping area as alleged by PMA. This adjustment reduces PMA's disallowance by 28,320 direct manhours or $613,400 direct and associated indirect costs.

(3) The manhours budgeted for construction completion were reasonably expended and should be allowed. This adjustment reduces PMA's disallowance by 838,000 direct manhours and $18,151,200 in direct and associated indirect costs.

(4) In reconciling whip restraints, PMA used incorrect definitive estimate amounts and did not properly account for the manhour variance. This adjustment reduces PMA's disallowance by 94,200 direct manhours and $2,040,300 in direct and indirect costs.

(B) Structural Steel Area:

(1) PMA did not consider the effects of lighter steel used in the erection of structural steel which resulted in more members to install than was anticipated in the Definitive Estimate. This adjustment reduces PMA's disallowance by 153,388 direct manhours and $3,070,700 in direct and indirect costs.

(2) PMA did not consider the effects of lighter weight steel in the Miscellaneous Steel category. This adjustment reduces PMA's disallowance by an additional 38,002 direct manhours and $760,700 in direct and indirect costs.

(3) PMA used an incorrect unit rate for installation of trumplets. This adjustment reduces

PMA's disallowance by 4,720 direct manhours and $94,400 in direct and indirect costs.

(C) Electrical Area:

(1) PMA used incorrect 1983 Forecast quantities by failing to include 587,345 LF of cable. This adjustment reduces PMA's disallowance by 65,500 direct manhours and $1,440,900 of direct and indirect costs.

(2) PMA overstated the definitive estimate manhours for the installation of penetrations. This adjustment increases PMA's disallowance by 8,830 direct manhours and $194,300 of direct and indirect costs.

(3) PMA used incorrect Definitive Estimate and 1983 Forecast manhours for final system check, which is included in Miscellaneous Items. This adjustment reduces PMA's disallowance by 8,920 direct manhours and $196,237 of direct and indirect costs.

(D) Building Finishes Area:

(1) PMA used incorrect Definitive Estimate and 1983 Forecast manhours to reconcile doors. Also, PMA did not consider the effect of repairs and replacement of doors, the additional safety and security requirements, and design changes which resulted in additional handling and manhours to install. This adjustment reduces PMA's disallowance by 27,798 direct manhours and $525,800 in direct and indirect costs.

(2) PMA did not consider that additional penetrations were necessary to accommodate design changes for additional security monitoring equipment in the roofing area. This adjustment reduces PMA's disallowance by 538 direct manhours and $10,200 in direct and indirect costs.

(E) Concrete Area:

(1) PMA used insufficient complexity factors to reconcile manhours required for construction openings and out-of-sequence openings. This adjustment reduces PMA's disallowance by 58,038 direct manhours and $956,110 in direct and indirect costs.

(2) The productivity rate used by PMA to estimate the effects of cold weather was insufficient. This adjustment reduces PMA's disallowance by 68,128 direct manhours and $1,122,390 in direct and indirect costs.

(3) PMA incorrectly assumed that manhours for reinforcing steel fabrication shop were included in work authorizations. Additionally, PMA allocated insufficient manhours to the on-site fabrication shop. This adjustment reduces PMA's disallowance by 402,908 direct manhours and $6,595,290 in direct and indirect costs.

(F) HVAC Area:

(1) PMA incorrectly transferred 8,910 manhours which should have remained in the HVAC area. This adjustment increases PMA's disallowance by 8,910 direct manhours and $186,000 in direct and indirect costs.

(2) PMA should have allowed additional manhours for design changes in reconciling ducts and supports. This adjustment reduces PMA's disallowance by 32,000 direct manhours and $668,000 direct and indirect costs.

(3) PMA incorrectly disallowed manhours for converting Non-Q duct to II/I based on Corrective Action Report 13, due to the fact that CAR-13 applies only to the piping area. This adjustment reduces PMA's disallowance by 10,500 di-

rect manhours and $219,300 direct and indirect costs.

(4) PMA used an incorrect normative rate for duct and supports. This adjustment reduces PMA's disallowance by 24,210 direct manhours and $505,500 direct and indirect costs.

(5) PMA disallowed certain manhours associated with changes to equipment and accessories. These unreconciled manhours are found to have been justifiably expended. This adjustment reduces PMA's disallowance by 21,900 direct manhours and $457,200 direct and indirect costs.

11. The total net effect of the adjustments in the above areas is to reduce PMA's disallowance by 2,208,461 direct manhours and $44,609,200 direct and indirect costs. We find that out of the total PMA recommended disallowance of construction costs of 4,036,723 direct manhours and $82,570,600 direct and indirect costs, a total of 1,828,262 direct manhours were imprudently incurred, either because those manhours resulted from imprudent management actions, were controllable by management, or were not reconcilable due to deficiencies in the owners' cost tracking systems. This finding is confirmed by the testimony of Mr. Huston that a net 1,866,000 manhours at the WCGS were incurred due to lower than average productivity. Therefore, we find that the related direct and indirect costs of $17,841,858 should be excluded from both a return on and recovery of KG&E's share of its investment in Wolf Creek. We find that $17,841,858 should be excluded from both a return on and recovery of KCPL's share of its investment in Wolf Creek. We find that $2,277,684 should be excluded from both a return on and recovery of KEPCo's share of its Wolf Creek investment.

12. We find that DIC received fees which were based on the total scope of work as defined in its contract.

Portions of the work scope such as instrumentation installation were subsequently removed from DIC's control. Based upon this finding, we conclude that an additional $450,000 was imprudently incurred as fees paid to DIC for work which they did not perform or administrate, but which was performed by other contractors. (Huston, TR. Vol. IV, p. 1005). For this reason we find that $211,500 should be excluded from both a return on and recovery of KG&E's share of its investment in Wolf Creek, $211,500 should be excluded from both a return on and recovery of KCPL's share of its investment in Wolf Creek, and $27,000 should be excluded from both a return on and recovery of KEPCo's share of its investment in Wolf Creek.

D. *QUANTITATIVE ANALYSIS—SCHEDULING*

1. We find that the owners of Wolf Creek have not presented any detailed reconciliation or analysis of the schedule slippage that occurred at the Wolf Creek construction project.

2. The owners did compare the overall schedule at Wolf Creek to other nuclear power plant construction schedules. They conclude that Wolf Creek's shorter construction schedule is evidence of management prudence. We do not believe such a comparison can be so conclusive. Comparing one plant to other plants in the industry does not adjust for inconsistencies among the plants. Wolf Creek may have had a shorter schedule than other plants, but we find, based on PMA's analysis, that it had a longer schedule than it should have had because the owners failed to avoid or mitigate controllable delay. In addition, we find the owners' comparative analysis contained basic flaws in the manner in which it was conducted, as pointed out in staff's brief, pages 233-241.

3. We have examined the schedule analysis that was performed independently by PMA using information gathered through data requests and interviews. PMA re-

viewed the Wolf Creek construction schedule from the start of construction in February 1977 through February 1984, when fuel load was scheduled to begin in October 1984. In February 1977, fuel load was expected to begin in May 1982. By comparing the original schedule to the February 1984 schedule, PMA found a 27 month difference in schedule duration to the point of fuel load. PMA's analysis of the change in the schedule duration is based on the critical path method. A critical path is the longest, time-wise, chain of logically interrelated activities in a schedule network. PMA's research included consideration of numerous activities and critical paths, but PMA selected only the three most critical paths for detailed analysis because PMA determined that these contained the activities that were in a logical sequence from receipt of the limited work authorization (LWA) to the date of fuel load as projected in the February 1984 construction schedule.

4. The three most critical paths start with the reactor building civil/structural work and flow through three separate reactor building mechanical system activities and are followed by preoperational testing and fuel load. The three major reactor building mechanical systems that were examined in detail include the reactor coolant system, the chemical and volume control system and the component cooling system. PMA determined what part of the schedule slippage on each sequence was uncontrollable, controllable, unreconciled, and mitigated (gain in schedule). PMA considered all increases in scope (quantity) to be the result of uncontrollable slippage, and thus recommended that this slippage be allowed. Uncontrollable slippage was based on the added quantities times the definitive estimate unit rate. The owners criticized PMA's use of the Definitive Estimate (D.E.) unit rate as not adequately allowing for uncontrollable slippage due to increased complexity. We have examined PMA's computations and find that in multiplying the Definitive Estimate unit rate times the 1980 and 1985 quantities, PMA

reasonably accounted for quantity and complexity increases among the heterogeneous commodities. We find that PMA properly accounted for uncontrollable slippage in this manner. Controllable and unreconciled slippage is disallowed in PMA's analysis, but only after it is offset by schedule mitigations or gains. In other words, all months of mitigation or gain are applied against controllable and unreconciled slippage to reduce the amount of disallowed schedule slippage. Controllable slippage was calculated using an average unit rate taken from the owners' Management Performance Evaluation (MPE). (Exhibit G-KG&E-1). The average unit rate was applied to the change in quantities between 1980 (when quantities were first accumulated by area) and 1985 (the latest available forecasted quantities). This yielded the manhours attributable to productivity change. We find that PMA's use of the industry average unit rates in the MPE is reasonable.

5. Of the three critical path sequences analyzed, PMA selected the one with the greatest uncontrollable slippage, because even if the project had experienced no controllable delay, there still would have been a 14.5 month delay for reasons beyond the owners' control. Using this analysis, PMA determined that in the sequence with the greatest uncontrollable delay, 14.5 months were uncontrollable, 37 months controllable, 1 month unreconciled, and 23.5 months were mitigated. PMA applied the 23.5 month gain as an offset to the 38 month controllable and unreconciled schedule delay to yield a net 14.5 month controllable delay. After examining this analysis in detail, we find it to have merit.

6. PMA identified numerous deficiencies and shortcomings with the DIC scheduling system. (Exhibit G-Staff-77, Schedule Report). This necessitated PMA's independent analysis. The owners have criticized PMA's methods as being mechanical, and as failing to include an analysis of all the critical paths. We find no merit

to these criticisms. PMA's analysis extended through February 1984. At that point, the Construction Intermediate Schedule (CIS) projected a fuel load date of October 1984. PMA chose this cutoff because this was the time that DIC discontinued updating and incorporating progress into its computerized construction schedule network. (Exhibit-Staff-77, Schedule Report p. 3).

7. The owners' witness, Mr. Huston, has offered an exhibit containing a list of numerous design change packages (DCPs) with construction completion dates beyond the October 1984 fuel load date. Mr. Huston concludes that regulatory change prevented the owners from loading fuel in October of 1984. The Commission does not find such a conclusion is warranted from that exhibit. (Exhibit-G-KG&E-175). We believe that if activities were critical to the October 1984 fuel load, the owners' February 1984 CIS schedule would have reflected them. There is no analysis given by Mr. Huston whether the activities listed on his exhibit are necessary for fuel load and, if they were necessary, whether they could not have been completed by the October 1984 fuel load date. The exhibit only indicates that in March 1985, some of the activities had not been completed to meet the October 1984 fuel load date, although in some cases the engineering was completed much earlier. There is no substantial evidence that PMA failed to consider all activities that affected the critical path. Indeed, we find that PMA did consider those activities on the critical path. (Exhibit G-Staff-77, p. 3; TR. Vol. XX, p. 5703; p. 5784-5785).

8. We therefore find that 14.5 months of the schedule slippage were within the control of the owners, and that the costs associated with such delay should be excluded as imprudent.

9. The issue of how to quantify the costs associated with the controllable schedule delay must be addressed next. PMA's analysis used the AFUDC and indirect/overhead costs associated with the last 14.5 months of

the project given the October 1984 fuel load date. PMA consulted the owners' Wolf Creek "projected construction expenditures" to obtain the AFUDC amounts for the last 14.5 months preceding the October 1984 fuel load date. (Exhibit-Staff-77, Schedule Report, p. 51). The total, $285,878,400, was distributed among the owners using the owners' recorded allocation. To this amount of AFUDC, PMA added a similarly computed amount, $78, 372,400, for indirect/overhead costs attributable to the 14.5 months controllable slippage. PMA reasoned that these amounts appropriately measured the cost of controllable delay because these costs were time related, that is, these costs continued to accumulate as the schedule was extended.

10. We find that PMA reasonably quantified the indirect/overhead costs attributable to the controllable delay because these costs accumulating at the end of the project would not have been incurred if the controllable slippage had been eliminated. We direct that the indirect/overhead cost be apportioned among the owners according to their percentage shares of WCGS: KG&E: $36,835,028; KCPL: $36,835,028; KEPCo: $4,702,344.

11. Applicants contend that even if there were avoidable delays in construction of Wolf Creek, exclusion of AFUDC is not a proper remedy. Witness Fairchild contended that ratepayers are not harmed by delays in construction unless their time value of money is less than the AFUDC accrual rate of the utilities. Fairchild suggested that implicit in the statutory policy to exclude CWIP from inclusion in rate base is a determination to the contrary; i.e., ratepayers have a greater time value of money than the AFUDC accrual rate. (TR. Vol. XXXII, p. 9637).

12. Witness DeStefano for KCPL argued that any disallowance for schedule slippage should be offset by the benefit to ratepayers in not paying increased rates earlier. His analysis showed that at a ratepayer dis-

count rate of 10.14 percent, ratepayers would be indifferent to "either currently rate basing the full capital cost of $1,367.2 million requested in this case or rate basing a capital cost of $1,187.5 million 14.5 months earlier." (TR. Vol. XXXVII, p. 11035).

13. Mr. Fairchild also disputes the use of AFUDC accumulated at the end of the project to quantify the costs of delays that occurred earlier in the project. He analyzed the controllable schedule delays calculated by PMA and testified that part of the controllable delay occurred from December 1978 through July 1979, part in 1980, and part between 1980 and 1984. Mr. Fairchild recalculated the AFUDC that would have been incurred had there been no delay, and determined the difference between actual versus no delay using the midpoint of each period to quantify the AFUDC. This method determined that $166,189,000 is the proper amount of AFUDC to be attributed to the 14.5 month controllable delay.

14. Both Mr. Fairchild's and Mr. DeStefano's arguments that exclusion of AFUDC is not a proper remedy, suffer from infirmities. Mr. Fairchild assumes without proof that ratepayers have a higher time value of money than the utilities, while Mr. DeStefano made mathematical errors and questionable assumptions. However, we find it necessary to only address the conceptual arguments. Both witnesses basically argue that if the construction schedule had not encountered delays, ratepayers may have had to pay for a lower cost plant but they would have had to pay for it earlier. Consequently, the argument goes, ratepayers benefited from the delays because they had use of their money longer than would have been the case with earlier completion of the project.

15. In this portion of the order, the Commission is determining what Wolf Creek plant construction costs are reasonable. This assumes that a utility, in constructing a plant, has an obligation to build the facility in an efficient manner and at a reasonable cost. There is no ques-

tion that delays in the construction schedule increase the total costs of the plant, just as much as increases in direct costs of the plant. It strains credibility to suggest that when the total costs of the plant increase unreasonably, the ratepayers are not harmed because they avoid paying for the plant earlier. Such a determination would mean that utilities have no incentive to finish projects without unnecessary delays because increases in costs would be passed on automatically to ratepayers. Utilities could prolong construction indefinitely without facing any consequencies of inefficient or unreasonable construction management practices.

16. This is not to suggest that recognition of the ratepayers' time value of money is always inappropriate. Clearly, in some circumstances, it is a factor which must be considered. In this context, however, it is not reasonable to even attempt to determine whether ratepayers benefited from construction delays. In addition to posing the wrong question, such an analysis requires questionable assumptions to be made. For instance, Mr. DeStefano's analysis assumed full rate base treatment of Wolf Creek under both the February 1984 and April 1985 completion date scenarios. Given our decisions in other portions of this order, such assumptions are unwarranted. We cannot speculate what rate base treatment would have been accorded Wolf Creek had it been completed fourteen and one-half months earlier. We may safely assume, however, that under the considerations we apply today, the treatment of Wolf Creek could vary over time. We find that exclusion of AFUDC associated with the controllable delay is a reasonable method of quantifying the cost of that delay.

17. We recognize that there is no single precise method of quantifying the AFUDC costs of controllable slippage at the Wolf Creek project. Although we find merit in Mr. Fairchild's quantification method, we are not completely without reservation concerning its use. First, it

quantifies the AFUDC based on expenditures to date rather than total projected costs. Historically, the percentage of AFUDC expenditures has lagged behind the percentage of construction complete. In this manner, Mr. Fairchild's analysis may understate the amount of AFUDC attributable to the delay since the entire project, not merely a portion of it, was delayed. Second, we believe that increases in actual direct costs could be associated with the delays which might be included in PMA's determination. Indeed, applicant's arguments ignore the fact that construction delays allow inflationary impacts to increase the costs of construction beyond the increased AFUDC. Third, Mr. Fairchild's analysis ignores the increased cost of capital to the owners which resulted as completion of the project was delayed.

18. Nevertheless, we conclude that Mr. Fairchild's quantification of AFUDC is a more reasonable proxy of the AFUDC costs associated with the controllable schedule delay than the PMA analysis. The PMA analysis, we believe, overstates the amount of AFUDC attributable to controllable delay. We find determining the difference between actual and what should have been incurred had no delay occurred, is the more reasonable method of quantifying controllable schedule slippage. The $166,189,000 of AFUDC calculated shall be apportioned among the owners as allocated by Mr. Fairchild in his analysis: KG&E: $73,286,000; KCPL: $77,092,000; KEPCo: $15,811,000. (TR. Vol. XXXII, p. 9636).

19. To this amount of AFUDC, we must add the indirect/overhead costs calculated by PMA as associated with the controllable delay. This yields a total of $244,561,400 as the cost of the 14.5 months controllable schedule slippage. We find that this amount should be excluded from total WCGS construction costs. When the disallowed costs are apportioned among the owners as directed above, each owner's share of WCGS construction costs disallowed as inefficiently and imprudently incurred,

is as follows: KG&E: $110,121,028; KCPL: $113,927,028; KEPCo: $20,513,344. We deny recovery of and a return on this part of each respective owners' investment in WCGS.

V. *NEED FOR CAPACITY*

A. *INTRODUCTION*

1. The Commission has received and considered with interest the testimony and exhibits of Dr. Richard A. Rosen in these proceedings concerning the economic loss expected to be incurred as a result of the commercial operation of Wolf Creek. (Rosen, TR. Vol. XXIII, XXIV, and XXV). As indicated *infra*, the Commission's findings implicitly accept Dr. Rosen's conclusions that large economic losses would result to the customers of KG&E from full rate base treatment of Wolf Creek, that Wolf Creek represents excessively expensive capacity, and that risk sharing principles should be applied in these dockets to properly apportion responsibility for excessive costs between KG&E ratepayers and shareholders. The Commission has been influenced, however, by the argument in KG&E's brief that:

> Dr. Rosen admits that his analysis is subject to "considerable uncertainty" in its underlying projections. (TR. XXIII, 6771). He also admits that his analysis becomes even more uncertain as it goes out in time. (TR. XXIV, 6994). (KG&E Brief, p. V-24).

In the view of the Commission, projections made by KG&E witnesses on the same subject are vulnerable to the criticisms KG&E has leveled at Dr. Rosen. Additionally, it appears to the Commission that often KG&E witnesses proposed projections much more questionable than those sponsored by Dr. Rosen, (for instance, Roen, TR. Vol. VII, VIII, XXIX; Fitzpatrick, TR. Vol. XXVII and XXVIII; Backus, TR. Vol. XXIX). Nevertheless, the Commission finds that the life cycle cost analyses presented are subject to a degree of uncertainty and the

Commission chooses to base its decision on what it believes to be a more objective standard.

2. The Commission finds that analysis of the need for Wolf Creek capacity and the reasonableness of the cost of Wolf Creek capacity should be addressed independently. KG&E's need for Wolf Creek capacity will be addressed in this section of the Order. The remaining question of the reasonableness of the cost of Wolf Creek capacity will be addressed in Section VI of the Order.

B. *APPLICATION OF THE "USED AND REQUIRED TO BE USED STANDARDS"*

1. K.S.A. 1984 Supp. 66-128 provides, in pertinent part, that the Commission:

> . . . shall determine the reasonable value of all or whatever fraction or percentage of the property of any common carrier or public utility governed by the provisions of this act which property is *used and required to be used* in its services to the public within the state of Kansas, whenever the commission deems the ascertainment of such value necessary in order to enable the Commission to fix fair and reasonable rates, joint rates, tolls and charges. (Emphasis added).

The Commission deems the ascertainment of the reasonable value of public utility property to be necessary in these dockets in which KG&E seeks a return of and a return on investment and, consequently, the Commission deems it appropriate to determine whether all or a fraction or percentage of KG&E's interest in Wolf Creek is used and required to be used in its services to the public.

2. If public utility property is not found to be used and required to be used, a deferral or "phase-in" of costs into rate base and an exclusion of carrying costs on the value of property deferred is permissible in accordance

with the terms of K.S.A. 1984 Supp. 66-128b which provides as follows:

> The commission may require a public utility to defer inclusion of all or any portion of the reasonable value of property determined not currently used and required to be used and may require the phase-in of such value over any period of time and in such increments as it determines to be appropriate. If the Commission requires a public utility to defer the inclusion of any portion of such reasonable value and orders a phase-in of such value, it may exclude any or all of the carrying or finance costs incurred after the date of its determination and throughout the period of any deferral or phase-in as so ordered.

However, if the Commission determines that all or a portion of the costs of acquisition, construction, or operation of a generating facility were incurred due to a lack of efficiency or prudence or were incurred in the acquisition or construction of excess capacity, then the Commission may exclude all or a portion of such costs from eligibility for recovery through rates in accordance with K.S.A. 1984 Supp. 66-128c which provides as follows:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.

> For the purpose of this act, "excess capacity" means any capacity in excess of the amount used and required to be used to provide adequate and reliable service to the public within the state of Kansas as determined by the commission. The commission may in its discretion prohibit or reduce the return on costs which were incurred in constructing, maintaining or operating excess capacity.

3. With the exception of certain older gas units, each generating facility on the KG&E system, including Wolf Creek, will be employed in the near term to serve KG&E system energy requirements. The fact that Wolf Creek should perform at a relatively low incremental operating cost, thereby requiring its use from an economic dispatch perspective, is implicit in Dr. Rosen's prospective Wolf Creek-In economic analysis which dispatches each of KG&E's units (Rosen, TR. Vol. XXIII, XXIV, and XXV) and was explicitly confirmed by KG&E witness Lucas. (Lucas, TR. Vol. XII, p. 3110). No party has argued that Wolf Creek will not be used to provide service to KG&E's customers (KG&E Brief, p. V-1). The Commission finds that Wolf Creek will be "used" by KG&E within the intent of K.S.A. 1984 Supp. 66-128 *et seq.*

4. Whether Wolf Creek is "required to be used" by KG&E in its services to the public within the State of Kansas is dependent upon a number of factors which do not remain static over time. As a result, the Commission's findings concerning the degree to which Wolf Creek is required to be used by KG&E must necessarily be revisited in subsequent rate proceedings as system characteristics such as available capacity and demand change. On one prior occasion the Commission interpreted and applied the "used and required to be used" standard to the application of an electric utility seeking partial rate base treatment and phase-in of a new gen-

erating facility. *In the Matter of the Application of Sunflower Electric Cooperative, Inc.*, Docket No. 143,069-U, 84-SNFE-369-R, the Commission considered the ratio of Sunflower's peak demand plus reserves to its available capacity. The Commission found that:

> (t)hese indicators suggest that a percentage of the Holcolmb Unit approaching but slightly less than 60% is currently used and required to be used. (KG&E Brief, p. V-5).

The "indicators" employed by the Commission in the *Sunflower* case are suitable for application in the captioned dockets because the question of whether generating capacity is "required to be used" cannot be determined in the absence of an analysis of peak demand, reserve margin and available capacity.

5. Peak responsibility must necessarily be quantified with reference to a particular point in time. KG&E has correctly noted in its brief that:

> As this Commission and the Kansas Supreme Court have recognized, "electric utilities must plan for the future." *See Kansas Gas & Electric Co. v. State Corporation Commission*, 218 Kan. 670, 544 P.2d 1396, 1402 (1976). Utilities have an obligation to serve which requires such planning. Utilities must therefore take a long-term perspective in their generation planning. This long-term perspective is further reinforced by the long lead times associated with constructing generating facilities in today's regulatory environment. [G-KGE-21 (GIR-1), III-46]. [KG&E Brief, p. V-3].

Due to the fact that baseload generating facilities are not likely to be brought into service in discrete segments exactly paralleling changes in demand (Lucas, TR. Vol. XII, p. 3121), the Commission believes that an analysis of peak responsibility for the purpose of identifying facil-

ities "required to be used" must incorporate a planning horizon perspective. To hold otherwise would create a future disincentive to the construction of facilities which constitute the most economic type of capacity for the particular system on a *scale* that would provide additional economies to the system.

6. KG&E filed in these proceedings a load and capability forecast for the nine year period 1985-1993. [Exhibit G-KGE-41 (JRL-4); See also Exhibit G-Staff-127 (RAR-4.2)]. The selection of a forecasted reference year for an analysis of peak responsibility is made somewhat more difficult by the fact that no witness in these proceedings proposed specific standards for the selection of such a reference point. In the absence of such specific standards, the Commission finds it reasonable to select a forecasted reference year from a range of years between one-half and two-thirds of the duration of the KG&E load forecast. Due also to the absence of evidence concerning specific standards, the Commission chooses to select as the reference year the final year of the range it has found reasonable. Use of 1990 as a reference year for this analysis allows for five years of projected growth in peak demand. Five years roughly corresponds to the period required to put into operation a combustion turbine peaking unit which is an appropriate consideration in this case. It is apparent from the record that applicant not only has no actual current need for capacity, but had no projected need during much of the time Wolf Creek was being constructed. Instead, the decisions to construct and continue were based on other factors. It is consequently evident that purely from a need for capacity perspective, applicant's facilities were sufficient to meet projected demand and it could have met unexpected changes in forecasted demand by construction of a combustion turbine peaking unit. It is reasonable, therefore, to allow a five year planning period. Both Exhibit G-KG&E-41 (JRL-4) and Exhibit G-Staff-127 (RAR-4.2)

indicate that KG&E'S forecasted peak responsibility for 1990 will be 1,852 megawatts.

7. The question of the appropriate reserve margin to be allowed KG&E in determining the degree to which Wolf Creek is "required to be used" received the attention of a number of witnesses. In the view of the Commission, sole reliance upon the reserve requirement of 15 percent established by the MOKAN power pool for its members as an indicator of the appropriate utility-specific reliability reserve is inappropriate as demonstrated by the testimony of Mr. Lucas:

> The MOKAN and SWPP reserve requirements are not based on rigorous engineering studies of the unique requirements of individual member systems or, for that matter, on rigorous engineering studies of the overall requirement of the MOKAN and SWPP regions. The MOKAN and SWPP reserve requirements simply constitute minimum reserve capacity levels which the member utilities through consensus have agreed to maintain. (Lucas, TR. Vol. XII, p. 18).

Evidence presented by KG&E indicated that the minimum reserve capacity necessary to provide adequate and reliable service for the KG&E system is 22.5 percent (Lucas, TR. Vol. XII, p. 3120; Limmer, TR. Vol. XXVIII, p. 8279). Based upon a reliability analysis prepared by Dr. Rosen, the staff presented evidence indicating that both KG&E and KCPL require a 22 percent reserve margin with Wolf Creek in operation and a 15 percent reserve margin without Wolf Creek in operation. (Rosen, TR. Vol. XXIII, p. 6600-6609). Dr. Rosen noted, however, that based upon his system reliability analysis of both KG&E and KCPL, a 15 percent reserve margin is satisfactory for maintaining adequate system reliability and that reserves in excess of 15 percent should be justified on economic, not reliability, grounds. (Rosen, TR. Vol.

XXIII, p. 6617). As indicated in Section VI of this Order, the Commission has found that Wolf Creek capacity is not fully cost justified in relation to alternative generation resources at the present time and that the risk-sharing principles advocated by Dr. Rosen (Rosen, TR. Vol. XXIII, p. 6712-6734) are reasonable and require allocation of responsibility for excessive capacity costs between KG&E's shareholders and ratepayers. Because Wolf Creek is not fully justified on economic grounds, the Commission finds that ratepayer responsibility for a full 22 to 22.5 percent reserve margin is unreasonable and that the risk-sharing principles of Dr. Rosen discussed fully, *infra*, require an allocation of responsibility for necessary reserves between ratepayers and shareholders. The Commission's finding is supported by the fact that:

> For KCPL, almost one-third of its share of Wolf Creek's capacity (about 168 MW in 1992) is needed solely to provide the seven percent increase in required system reserves directly caused by Wolf Creek itself (peak load is forecast at about 2400) (Rosen, TR. Vol. XXIII, p. 6617-6618).

A similar calculation for the KG&E system indicates that almost twenty-six percent of its share of Wolf Creek capacity (about 136 megawatts in 1992) is needed solely to provide the seven percent increase in required system reserves directly caused by Wolf Creek itself (peak load is forecast at about 1,958 megawatts). [See Exhibit G-KG&E-41 (JRL-4)].

8. Dr. Rosen testified that a 15 to 20 percent reserve margin was normally deemed adequate for a large, well interconnected system (Rosen, TR. Vol. XXIII, p. 6602) and that:

> . . . most well interconnected utility systems in the U.S. plan on the basis of reserve margins in the 15

to 20 percent range for reliability. (Rosen, TR. Vol. XXIII, p. 6609).

Dr. Rosen noted that reserve margins slightly above 20 percent may be required in certain circumstances, particularly if the system relies heavily upon large nuclear units which have relatively high outage rates, but that the degree of interconnection with other utility systems could moderate the impact because:

> . . . with sufficient interconnection even heavily nuclear utilities may not need high reserves. One such utility, Commonwealth Edison, plans its system on the basis of a 15 percent reserve margin for reliability purposes. (Rosen, TR. Vol. XXIII, p. 6602-6603).

Dr. Rosen concluded that certain important features of the MOKAN Power Pool and the Wolf Creek co-owners systems tend to situate the companies at the low end of the 15 to 20 percent reserve requirement range because the systems tend to have greater or equal levels of reliability at lower levels of reserves. (Rosen, TR. Vol. XXIII, p. 6610). Among the features cited by Dr. Rosen are the following:

> The MOKAN Power Pool has an annual load factor of about 49 percent. This is much lower than the national average load factor of about 61 percent . . . All three co-owners have load factors at or below 50 percent . . . These utilities are sharply peaking in the summer. This circumstance provides substantial scope for scheduling maintenance during periods when reliability is high. The consequence of this is that very few hours during the year are likely to contribute to the loss of load probability and the peaking facilities and load management technologies are more likely to be cost-effective options for maintaining reliable service than in more typical systems. (Rosen, TR. Vol. XXIII, p. 6610).

* * * * *

> The MOKAN Power Pool also has a reliability advantage, as compared with many other systems, deriving from the absence, thus far, of nuclear generating facilities in the resource mix. About 70 percent of installed capacity is coal-fired, the rest being dual-fuel steam turbines and peaking facilities. Moreover, the system is dominated by a large number of relatively small generating units. (Rosen, TR. Vol. XXIII, p. 6611).
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> Finally, the MOKAN Pool is well situated geographically for bulk power support. As part of the Southwest Power Pool or SPP (actually not a pool but a NERC regional reliability council) MOKAN has transmission links to the Oklahoma systems, via 345 KV networks in central and eastern Oklahoma and Kansas, and via a 230 KV tie in western Kansas and the Oklahoma-Texas Panhandle region. Interties to other regional reliability councils, directly to MAPP to its north and MAIN to its east, and indirectly to others, affords the MOKAN system substantial emergency support to maintain reliable service in the event of unusual generation outages and/or load surges. Simultaneous import capability (i.e., transmission system transfer limits into MOKAN) has been estimated at above 3000 MW. (Rosen, TR. Vol. XXIII, p. 6611-6612).

Based upon the evidence in these dockets, the Commission finds that a 15 to 20 percent reserve margin is adequate for KG&E system reliability and that, due to the commercial operation of Wolf Creek, a margin at the top of the range found adequate for system reliability should be implemented for ratemaking purposes. The Commission finds that a reserve in excess of 20 percent should be justified from an economic perspective. The Commission has found in Section VI of this order, *infra*,

that Wolf Creek capacity is not fully cost justified in relation to alternative generation resources at this time.

9. Having determined that a 1990 forecasted reference year should be used to determine peak responsibility on the KG&E system, a 1990 forecasted reference year must necessarily also be used to analyze available system capacity. Both Exhibit G-KG&E-41 (JRL-4) and Exhibit G-Staff-127 (RAR 4.2) indicate that KG&E's available capacity in 1990 will be 2,595 megawatts. Additionally, both Exhibit G-KGE-41 (JRL-4) and Exhibit G-Staff-127 (RAR-4.2) assume that Wolf Creek will be rated at a net capacity of 1117 megawatts in accordance with the testimony of KG&E witness Lucas. (Lucas, TR. Vol. XII, p. 3104). Dr. Sturgeon testified that he understood KG&E had announced the retirement of its Neosho and Ripley facilities (Sturgeon, TR. Vol. XXVI, p. 7693). Based solely upon Dr. Sturgeon's comment, KG&E argued in its brief that its system capability should reflect the retirement of Ripley and the mothballing of Neosho (KG&E Brief, p. V-6) resulting in a 1990 system capability of 2,436 megawatts. KG&E's argument appears to be merely an afterthought which is unsupported by its own application for rate relief. KG&E has not presented evidence in this proceeding concerning the prudence of retiring Ripley or mothballing Neosho. KG&E's generation planning witness testified only that:

> Fourth, Wolf Creek's commercial service, combined with the potential to reduce the amount of on-line generation required at all times in the Wichita area, *may* permit KG&E to retire those older gas units which can no longer be economically maintained. This would reduce O&M expenses. (Lucas, TR. Vol. XII, p. 3110). (Emphasis added).

Additionally, KG&E's rate application appears to seek recovery of costs attributable to the continued operation of the Ripley and Neosho plants. Exhibit G-KG&E-41

(JRL-2) is entitled "KG&E's Power Plants and Operating Characteristics." The sum of the column representing the KG&E share of total generating facility capability indicates a KG&E generating capability of 2,084 megawatts which includes both the Ripley and Neosho facilities. That figure corresponds with the 1984 actual KG&E generating capability of 2,084 megawatts from which the KG&E total system capability of 2,099 megawatts shown on KG&E's Load and Capability Forecast is derived. [Exhibit G-KG&E-41 (JRL-4)]. With reference to Exhibit G-KG&E-41 (JRL-4), KG&E's total system capability forecast increases to 2,595 megawatts by 1988, however neither the Ripley nor Neosho facilities appear to have been removed from the generating capability column which remains constant from 1984 through 1993 except for the addition of Wolf Creek capacity in 1985. Because KG&E belatedly argues only that the Neosho facility will be mothballed as opposed to retired, the Commission must find in light of the only substantial competent evidence of record that the Neosho facility is available for use. The only evidence in the record supporting the assertion in KG&E's brief that the Ripley facility will be retired is the statement of Dr. Sturgeon that he understood KG&E had announced the retirement of Ripley. (Sturgeon, TR. Vol. XXVI, p. 7693). The Commission finds that a full evidentiary hearing is necessary to determine the efficiency or prudence of the retirement of the Ripley facility in accordance with K.S.A. 1984 Supp. 66-128 and directs KG&E to file an application initiating such a review at its earliest opportunity. Within the context of the Ripley evidentiary hearing, the Commission will determine the degree to which the revenue requirement approved herein contains operating and maintenance expense and other expenses attributable to the Ripley facility. In the interim, the Commission finds that one-half of the MOKAN accredited capacity of the Ripley facility (46 megawatts) shall be deemed available for use. [*See* Exhibit G-KGE-41 (JRL-

2)]. The Commission finds that an order pursuant to K.S.A. 1984 Supp. 66-128 concerning the prudence or efficiency of retirement of the Ripley facility should be issued prior to the conclusion of the permanent Wolf Creek rate proceedings. The level of revenue presently being deferred by this order, as well as the carrying cost on those deferred revenues, will be modified prospectively from the date of an order in the Ripley facility evidentiary hearing to reflect the appropriate treatment of Ripley capacity. The Commission further finds that capacity available for use by KG&E shall be computed by reducing forecasted year 1990 available capacity of 2,595 megawatts [Exhibit G-KGE-41 (JRL-4) and Exhibit G-Staff-127 (RAR-4.2)] by one-half (or 46 megawatts) of the accredited capacity of the Ripley facility [Exhibit G-KGE-41 (JRL-2)] for a total of 2549 megawatts of available capacity.

10. The Commission finds that 327 megawatts of KG&E's interest in Wolf Creek are not required to be used in its services to the public within the State of Kansas. That figure is computed as indicated below:

Available Capacity (megawatts)		2,549
Peak Responsibility in 1990 Reference Year (megawatts)	1,852	
Reserve Requirement		
Percentage of Peak	x .20	
Megawatts	370	
Peak plus Reserve (megawatts)		2,222
Capacity in Excess of Peak Plus Reserve (megawatts)		327

11. The Commission finds that the portion of Wolf Creek found not "required to be used" by KG&E in its services to the public within the State of Kansas in paragraph 10 above shall be ineligible to earn a return on investment in accordance with the terms of K.S.A. 1984 Supp. 66-128c which provides that:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.

12. The evidence is conflicting as to whether KG&E's need for capacity, or lack thereof, influenced its decision to construct and continue investment in Wolf Creek. In 1981, KG&E responded to a shareholder proposal to halt Wolf Creek construction by stating, *inter alia*, that "studies indicate the Company will not have adequate capacity to meet customers' needs and maintain required reserves later in the 1980s if the Wolf Creek unit is not brought on line." (Exhibit G-staff-38). Yet KG&E witnesses Cadman and Roen and the KG&E Brief have indicated that the decision to construct Wolf Creek and continue investment on a year-to-year basis was *not* based upon a need for capacity but rather was based primarily upon a concern about fuel availability. (Cadman, TR. Vol. X, p. 2768; Roen, TR. Vol. VI, p. 1498; KG&E Brief, p. III-3-26). Regardless of whether the need for capacity influenced KG&E's Wolf Creek generation planning, there appears no dispute that from an early 1970's perspective, diversification of KG&E fuel sources was an important generation planning consideration. Dr. Rosen agreed that fuel diversification was an appropriate goal for KG&E generation planning at that time. (Rosen, TR. Vol. XXIII, p. 6563, 6746). In May 1967 Cities Service Gas Company informed KG&E "that any new long-term gas contracts would be interruptible, and that long-term pric-

ing could not be fixed in advance." [Exhibit G-KGE-21 (GIR-1) p. IV-57]. At that time and until 1973, KG&E relied exclusively on natural gas and fuel oil as generation fuels. [Exhibit G-KGE-21 (GIR-1) p. IV-56]. The uncertainty of natural gas availability and price stability increased as time passed and became a predominant factor in KG&E's generation planning by the mid-1970s. [Exhibit G-KGE-21 (GIR-1) p. 43]. KG&E diversified its fuel sources by participation in the Jeffrey Energy Center and LaCygne coal units. (Cadman, TR. Vol. XI, p. 2999-3000). LaCygne Unit No. 1 became commercially operable in June 1973; LaCygne Unit No. 2 in May 1977; JEC Unit No. 1 in July 1978; JEC Unit No. 2 in May 1980; and JEC Unit No. 3 in May 1983. [Exhibit G-KGE-21 (GIR-1), p. IV-17]. Reserving comment for other paragraphs of this Order as to whether Wolf Creek was the correct size of unit for the KG&E system or whether a nuclear facility was the correct type of unit for the KG&E system, it does however, appear, and the Commission finds, that from an early to mid-1970's perspective, legitimate concerns about gas and oil fuel availability reasonably and appropriately prompted the construction by KG&E of additional generating facilities. The Commission has found at Paragraph 3 of this Section, *supra*, that Wolf Creek will be "used" by KG&E in its services to the public within the State of Kansas as that term is contemplated by K.S.A. 1984 Supp. 66-128. For that reason, the Commission finds that KG&E is entitled to a return of (through depreciation on) its investment in the 327 megawatts of Wolf Creek found to be excess in paragraph 10 above.

VI. *ECONOMICS OF WOLF CREEK*

A. *INTRODUCTION*

1. The Commission has determined above that certain construction costs of Wolf Creek were imprudently and inefficiently incurred and should not be included in rate

base and that a further portion of the plant represents physical excess capacity not currently used and required to be used. The remaining issue for determination is the reasonable value of that portion of Wolf Creek which is reasonably necessary to provide service. This essential question was hotly disputed by the parties. We will not attempt to summarize all the voluminous evidence on this issue but will mention a few of the arguments.

2. Staff witness Rosen presented extensive evidence supporting staff's economic analysis. Dr. Rosen basically argued that an evaluation of physical excess capacity is inadequate in itself to determine whether a new capacity addition imposes unnecessarily high penalties on ratepayers. Staff contends that an economic evaluation is necessary to supplement the engineering evaluation of excess capacity. Dr. Rosen performed such an economic evalaution by comparing the revenue requirements resulting from inclusion of Wolf Creek in rate base with a more optimal alternative in which gas turbines and eventually coal fired generation was added. Dr. Rosen's analysis showed that in 1984 dollars, KG&E ratepayers face $1.62 billion more in revenue requirements with Wolf Creek than his alternative, while KCPL ratepayers face a cumulative "net loss" of $1.73 billion. Dr. Rosen also concluded that about 85% of these economic penalties occur in the first ten years of Wolf Creek's operation. He further found that the net losses approximately equaled the capital costs, i.e. depreciation and return, of Wolf Creek.

3. Dr. Rosen also performed a retrospective analysis examining the results of cancellation of the plant in 1981. He concluded that, based on information then available, the continuation of the project would have been seen to result in $500 million more in revenue requirements (1984 present value) than cancellation with recovery and return on the sunk construction costs. Approximately one-half of the current economic loss is con-

sequently ascribed to the continuation of the project after 1981. Based on these findings, Dr. Rosen recommended that the total economic loss resulting from continuation of the project after 1981 be accepted by the companies. The remainder, representing basically the sunk costs at the end of 1981, he proposed to split between the ratepayers and the companies.

4. ALERT's witness, Dr. Komanoff, performed a similar analysis applicable to KG&E only. He concluded that based on evidence available in 1979, KG&E should have realized that Wolf Creek would have resulted in a net economic loss to ratepayers of $750 million, and should have cancelled the plant. He recommended that only 7% of the plant be included in rate base.

5. Dr. Sturgeon, on behalf of intervenor Electric Shock Coalition, testified that both KG&E and KCPL have more than adequate base load capacity. Even if there were a supply short fall, Dr. Sturgeon argued that the proper way of meeting demand is to add peaking plants by off-system power. If Wolf Creek were less expensive than the baseload plants being displaced, it would qualify for rate base treatment, but such a showing is not likely in Dr. Sturgeon's view. He therefore recommended no inclusion of Wolf Creek in rate base.

6. Witnesses testified on behalf of the Hospital and Industrial Intervenors that Wolf Creek represents substantial excess capacity at an extremely high cost. They recommended that shareholders should bear a portion of the costs with the remainder to be phased-in over a seven year period.

7. Applicant contends that the economic evaluation proposals of staff witness Rosen and ALERT witness Komanoff should not be adopted for several reasons. First, it argues that the Commission has traditionally valued rate base additions at original historic cost and that deviation from that practice after the fact is in-

equitable and requires advance notice. Furthermore, the company suggests that adoption of a fair value approach by the Commission would have to be applied to all facilities of a utility and not just a new facility. Applicant contends that the analysis performed by Dr. Rosen was too speculative, required thousands of assumptions and was an exercise in hindsight using a "perfection standard".

B. *DISCUSSION*

1. The Commission has concluded that an economic valuation of the Wolf Creek facility is a desirable approach in this case. As more fully discussed below, we believe that the reasonable value of the portion of that facility which is to earn a return is something less than its cost of construction. This approach is not only necessary to ensure reasonable rates but also is required by the statutory provisions enacted by the 1984 Legislature in House Bill 2927.

2. The Commission is persuaded by the arguments of several parties that Wolf Creek represents not only physical excess capacity in that much of the plant's capacity is not currently needed but also economic excess in that the capacity that is required is too expensive and uneconomical. As Dr. Rosen testified:

> The broader economic issue of excess physical capacity involves a determination of whether an excess of *certain types* of generating capacity exists (e.g., too much base load relative to cycling and peaking). Such a circumstance would result in costs of supplying power that are unreasonably high relative to a system with an economically optimal mix of types of generating capacity. Thus, excess capacity of one type of capacity could exist, even if in the aggregate there is no excess capacity with respect to system reserve requirements for adequate reliability. Additionally, poor economics for new generating units can

> arise from other factors, including excessively high capital costs and/or the emergence of economically advantageous resource alternatives. The net result of any or some combination of the above factors can be to render a new capacity addition, which may have *initially* been justified, uneconomically under current and expected conditions. (Rosen, TR. Vol. XXIII, p. 6587-6788).

The Commission believes that the type of long term life-cycle economic analysis performed by Dr. Rosen is very beneficial. Indeed, even Applicant appears to concede that this type of analysis is a useful tool for generation planning purposes. Obviously, the overall long-term benefits and costs of a major construction project are essential considerations for not only utility companies but also regulatory commissions. We conclude, however, that we cannot rely on Dr. Rosen's type of analysis to determine the precise valuation of Wolf Creek in this case.

3. As vigorously stated by applicant, the Rosen analysis requires projections into the future of many factors affecting the relative economics of various alternatives. For instance, capacity factors, variable O&M costs, capital additions, replacement power costs, and decommissioning costs were all subjects of extensive debate during the testimony of numerous witnesses. The Commission does believe that, overall, Dr. Rosen's assumptions for these various inputs into the analysis were more reasonable and realistic than applicants' witnesses. If nothing else, his figures had the virtue of consistency whereas the company witnesses seemed to have made no effort to coordinate their various assumptions, perhaps the most egregious example being the projected cost of capital additions necessary for Wolf Creek. The company witnesses presented testimony predicting such costs which ranged from $10 million to $81 million annually. Although we therefore believe that Dr. Rosen's conclusions are good indications of the overall economics of Wolf Creek, we are

reluctant to base a precise valuation of the plant on those results. We have concluded instead that a more near-term approach requiring fewer projections should be used, as set forth below.

4. The Commission is not persuaded, moreover, by the applicant's argument that a "fair value" valuation of Wolf Creek is inequitable. First, and perhaps most important, the Kansas Legislature has appeared to require examination of the economics of a rate base addition. Under the provisions of K.S.A. 1984 Supp. 66-128g(a) the Commission must consider a number of factors in determining prudence and the reasonable value of electric generating property. Those factors include:

(1) A comparison of existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that utility;

(2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;

(5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

(9) whether inclusion of all or any part of the cost of construction of the facility under consideration, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest of Kansas;

(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

This statutory mandate compels consideration of the economics of a plant in determining the reasonable value of a rate base addition and also provides notice to the utilities of the general standards to be used. Further, as discussed more subsequently, we do not believe that use of an economic valuation approach is required for all utility plants as suggested by applicant.

5. In considering the appropriate valuation for Wolf Creek, the Commission believes that the appropriate factors may be grouped into several salient sets of facts: The applicant's decisions to initiate and continue construction of a nuclear generating facility; the economic costs to ratepayers and the company of the resulting rates; and the risks assumed by the company and shareholders.

Decisions to Build and Continue

1. Applicant KG&E, as noted above, based its decision to undertake construction of a nuclear generating facility on the perceived need to achieve fuel diversity. KG&E, reliant on gas-fired generation in the late 1960's, began examining coal and nuclear generation in its planning in view of apparent impending shortages of natural gas for use in generation facilities. The 1978 Federal Fuel Use Act confirmed the natural gas shortage by restricting use after 1989 to peaking units (those operating less than 1,700 hours per year.) KG&E contends that even though the Fuel Use Act was amended in 1981 to remove re-

strictions on existing generation plants, it still is obligated to reduce its dependence on natural gas by 50%. Further, KG&E argues that although use of coal is now encouraged by national energy policy, concerns about "acid rain", increased coal transportation costs due to railroad deregulation and the possibility of a coal mine strike pose risks to heavy reliance on coal. Applicant KCPL contends that it also based its decision to build a nuclear facility on the perceived need to achieve fuel diversity. Heavily reliant on coal generation, the company was concerned about possible escalating costs for coal, supply disruptions and environmental difficulties. The company also was aware of the increasing scarcity of oil and natural gas.

2. Staff witness Rosen did not dispute the prudence of the companies' initial decision to build a nuclear plant. However, he contended that the companies had an obligation, in view of the magnitude of the Wolf Creek project and the economic risk involved, to engage in regular reviews to determine if continuation was a prudent policy. He concluded that the companies' planning exercises were too infrequent and deficient in both design and execution.

3. KG&E witness Roen testified that between 1968 and the date of the filing of KG&E's rate case in these dockets, no outside consultants prepared for KG&E an independent, ~~economic~~ life cycle coal-versus-nuclear cost analysis. (Roen, TR. Vol. VI, p. 1646).

4. An analysis was performed for KG&E by Ebasco Services, Inc. in February 1971 favoring participation in construction of two large nuclear units (1,100 MW each) to come on-line in 1978 and 1980. (Rosen, TR. Vol. XXIII, p. 6568).

5. KG&E witness Roen testified that KG&E staff prepared internal-coal versus nuclear cost comparisons in 1973, 1975, 1976, 1978, 1979 and 1980. (Roen, TR. Vol.

VI, p. 1646). (Exhibits G-Staff-22 through 27). Mr. Roen indicated that KG&E's 1973 study (Exhibit G-Staff-22) was "probably not" state-of-the-art but characterized the 1975 studies (Exhibits G-Staff-23 and 24) as a "good piece of work." (Roen, TR. Vol. VI, p. 1686). KG&E's 1976 economic cost-benefit study of Wolf Creek compared to alternatives consisted of a one page levelized bus bar energy bar chart for a 10 year period of analysis (Roen, TR. Vol. VI, p. 1690, Exhibit G-Staff-25) which, by definition, was not a life cycle economic cost analysis for either the nuclear or coal facilities analyzed. (Roen, TR. Vol. VI, p. 1691). Among other weaknesses, the 1976 analysis assumed it would cost as much to operate and maintain a coal plant as it did to operate and maintain a nuclear plant (Roen, TR. Vol. VI, p. 1694), assumed the capacity factor for a nuclear plant would exceed the capacity factor for a coal plant (Roen, TR. Vol. VI, p. 1698), ignored capital additions and decommissioning expense for the nuclear facility (Roen, TR. Vol. VI, p. 1697, 1703) and did not address the need for capacity. (Roen, TR. Vol. VI, p. 1705). The scope of KG&E's 1978, 1979 and 1980 "economic" cost benefit analyses of the coal-versus-nuclear options (Exhibits G-Staff-26, 27 and 28) and most of the assumptions found therein are the same or similar to the company's 1976 analysis described above. (Exhibit G-Staff-24). (Roen, TR. Vol. VI, p. 1705 through TR. Vol. VII, p. 1765). During the cross-examination testimony of KG&E witness Lucas, the witness indicated that analyses of Wolf Creek economics were prepared by KG&E employing a longer than ten year planning horizon, but that documentation of such analyses were unavailable:

> As I indicated earlier, this is one—that was one of several things that we looked at, and it may have been on the back of an envelope, but it was very definitely done; and in those days, you didn't keep all of the envelopes that you worked on. (Lucas, TR. Vol. XII, p. 3176).

It is interesting to note that KG&E's 1980 ten-year levelized bus bar energy cost comparison found a coal facility to be more economical than a nuclear facility (Roen, TR. Vol. VII, p. 1733) and that thereafter KG&E discontinued preparation of what had become an annual one-page analysis.

6. In May of 1980, Ebasco Services, Inc. submitted to KG&E a review and critique of the KG&E nuclear-versus-coal studies. At that time, the construction of the Wolf Creek generating station was well underway. The 1980 Ebasco study endorsed the earlier KG&E findings favoring the economics of the nuclear project. In terms of the initial decision, the report stated:

> KG&E's 1973 decision to proceed with a nuclear project was reasonable from an economic viewpoint as indicated in KGE-1, *Generator Addition Study (Early Eighties Coal vs. Nuclear)*, 1973.

With respect to the subsequent analyses, the 1980 report stated:

> . . . it is Ebasco's conclusion that a complete and realistic comparison made after 1973 of alternatives to the Wolf Creek Generating Station Unit 1 will indicate a significant economic advantage in favor of WCGS1.

(Rosen, TR. Vol. XXIII, p. 6568-6569).

7. A 1981 study was completed for the entire MOKAN power pool by Gilbert/Commonwealth, Inc. While there are certain cost comparisons of various planning scenarios, the study did not analyze the economics of the then current generation plans of the member utilities. The Gilbert/Commonwealth analysis was concerned with longer range generation planning strategies and assumed the projected completion dates for plants already planned. (Rosen, TR. Vol. XXIII, p. 6570).

8. According to Dr. Rosen, KCPL appears to have been highly reliant on the analyses performed by KG&E concerning the relative economics of nuclear power units and of Wolf Creek specifically. (Rosen, TR. Vol. XXIII, pp. 6574-6575). Mr. McPhee referenced a number of economic comparison studies in his testimony which purported to demonstrate the economic superiority of Wolf Creek over coal-fired or other types of generation. Mr. McPhee cited a 1971 study entitled "Generation Expansion Study After LaCygne 1." (McPhee, TR. Vol. XIV, p. 3838). The study covered only a 10 year time period from 1975-1985 (McPhee, TR. Vol. XIV, p. 3980) and recommended a plan which included 550 MW of combustion turbine power, 100 MW of purchased power, and 300 MW of nuclear power. (McPhee, TR. Vol. XIV, p. 3982). The 1971 report omitted information concerning the assumptions used to calculate decommissioning costs, nuclear spent fuel handling, storage, transportation, disposal costs and capital additions. The study failed to address the need for capacity. (McPhee, TR. Vol. XIV, p. 3993). KCPL did not follow the generation plan recommended by the study (McPhee, TR. Vol. VIX, pp. 3982-86). The study incorporated analysis of Wolf Creek over only the first five to six years of its operation. (McPhee, TR. Vol. XIV, p. 3986). The 1971 report did not compare the relative economic costs of a single nuclear unit to a single coal unit with all other generation planning factors remaining equal. (McPhee, TR. Vol. XIV, p. 3986).

9. Mr. McPhee's prefiled testimony (McPhee, TR. Vol. XIV, p. 3839) made reference to a KCPL nuclear-versus-coal study prepared in 1974. Unfortunately, this study also suffers from a limited time frame of analysis (1982-1992) and a dearth of information on underlying assumptions. Mr. McPhee admitted, on cross-examination, that at any nuclear capacity factor less than 70 percent, a coal plant was shown to be economically superior to a nuclear plant. (McPhee, TR. Vol. XIV, p. 3995).

10. Exhibit G-Staff-56 is a KCPL generation expansion study dated April, 1975. The study covered only the first 15 years of the expected life of Wolf Creek. (McPhee, TR. Vol. XIV, pp. 4017-18). The study did not compare the relative economic costs of a single nuclear unit to a single coal unit with all other generation planning factors remaining equal. (McPhee, TR. Vol. XIV, p. 4018). The study concluded the most desirable planning option was one which provided for Wolf Creek nuclear power in 1982, reduction of the current capital budget requirements by deferring Iatan from 1980 to 1985 and installation of gas turbines. (McPhee, TR. Vol. XIV, p. 4020). This, once again, was a recommendation which KCPL chose not to adopt. (McPhee, TR. Vol. XIV, 4021). In fact, Mr. McPhee testified during cross-examination that the actual generation plan KCPL chose was the next to highest cost option studied. (McPhee, TR. Vol. XIV, p. 4022).

11. Exhibit G-Staff-201 is a KCPL levelized bus bar energy cost comparison of the Wolf Creek and Iatan facilities prepared in May 1980 for the study period 1983 through 2012. (Evans, TR. Vol. XXXVIII, p. 11296). Units of different sizes were being compared (Evans, TR. Vol. XXXVIII, p. 11297). Operating and maintenance costs were assumed to be higher for a coal plant than for a nuclear plant. (Evans, TR. Vol. XXVIII, p. 11297). The capacity factor of the nuclear plant was assumed to equal the capacity factor of the coal plant. (Evans, TR. Vol. XXVIII, p. 11297). Capital additions for the nuclear and coal facilities were not analyzed. (Evans, TR. Vol. XXXVIII, p. 11300). Decommissioning expense and nuclear spent fuel handling, storage, transportation and disposal cost assumptions were not stated. (Evans, TR. Vol. XXXVIII, pp. 11300-11301). The analysis did not attempt to determine the most economic size of unit for the KCPL system given the need for capacity at the time. (Evans, TR. Vol. XXXVIII, p. 11301). The conclusion of the analysis that the levelized bus bar en-

ergy cost of Iatan would be greater than Wolf Creek resulted "principally because of the shorter book life." (Evans, TR. Vol. XXXVIII, p. 11302).

12. By 1976, KEPCo had begun an investigation of various power supply options with the objective of allowing the cooperative to become an owner of generating facilities and a transmitter of electrical power. In addition to investigating participation in such coal-fired plants as the Jeffrey Energy Center and Iatan, KEPCo engaged a consultant to conduct a feasibility study of KEPCo's participation in Wolf Creek. A preliminary feasibility study completed in early 1977 indicated the desirability of KEPCo becoming involved in the construction of Wolf Creek, suggesting a 17 percent ownership share of the plant. However, the report did not include a comparison of alternative power supply scenarios. Rather, it compared the costs of electricity to the cooperatives over time (including Wolf Creek power availability) with and without KEPCo acting on their behalf as a direct participant in the Wolf Creek project. Another weakness in the analysis was that the demand projections employed were out-of-date because of reliance on a 1973 Power Requirements Study. (Rosen, TR. Vol. XXIII, p. 6577).

13. KEPCo witness Mulholland agreed that Schedule 2, Section 2, Volume 1, of the March 1977 report (Exhibit C-Staff-22) concluded that cooperatives in the KG&E service area would sustain an $8,000,000 loss by associating with KEPCo if KEPCo was a co-owner in Wolf Creek. (Mulholland, TR. Vol. C-3, p. 789). He further conceded that 43 of the total 67 megawatts of Wolf Creek power available to KEPCo would be used in the KG&E service area and that the report indicated that the KG&E area would be the worst area to use Wolf Creek power. (Mulholland, TR. Vol. C-3, p. 789). Mr. Mulholland admitted that the report showed that substantial economic losses would result from use of the Wolf Creek power in the KG&E service area. (Mulholland, TR. Vol. C-3, p.

790). Mr. Mulholland testified that the 1977 study assumed that KG&E, KPL, and CTU would all incur and pass on to KEPCo increased costs from the acquisition of substantial additional generating facilities. For planning purposes, KG&E was deemed to acquire *four* nuclear power plants and an additional combustion turbine, as well as its interest in four Jeffrey units and LaCygne No. 2 by 1994. (Mulholland, TR. Vol. C-3, p. 792). Kansas Power & Light was scheduled to acquire interest in four Jeffrey units, two nuclear units, (one in 1988 at 700 MW and one in 1992 at 900 MW) and two additional combustion turbines by 1995. (Mulholland, TR. Vol. C-3, p. 793). CTU was scheduled to acquire an interest in four Jeffrey units, an interest in four nuclear units, an interest in three combustion turbines by 1991, and an interest in a coal plant by 1993. (Mulholland, TR. Vol. C-3, p. 794). That the additional capital costs and operating and maintenance costs from all of these new generating facilities would raise the power production costs of those utilities and result in higher wholesale prices for power they sell is obvious.

14. At the time the KEPCo studies were prepared, KG&E, according to other testimony filed in this proceeding, was aware that it would not need all of the power from Wolf Creek to meet demand. It had filed reports with MOKAN showing a capacity balance above and beyond peak plus a 15 percent reserve margin of 377 megawatts upon commercial operation of Wolf Creek. However, Mr. Mulholland testified that the data used by KEPCo consultants would not have reflected the most recent information, because:

> They [KG&E or MOKAN] were not cooperative in giving us information. We had to get it from every source, clandestine or otherwise, that we could. (TR. Vol. C-3, p. 799).

He further testified concerning the data that KEPCo consultants used:

It was probably based on 1975 or no later than 1976 MOKAN pool load and capacity projections. We took that data because it was the best information that we had available about KG&E. (TR. Vol. C-3, p. 799).

15. In March 1979 KEPCo entered into a preliminary agreement for 17 percent ownership of the Wolf Creek Generating Station. Another feasibility study of Wolf Creek prepared by KEPCo consultants became available at that time with a similar analytic approach. Again, the issue addressed was whether costs would be higher with or without KEPCo ownership in Wolf Creek combined with the purchase of 90 MW of Southwestern Power Administration (SWPA) hydroelectric power. Economic impacts were provided assuming uniform rates for all cooperative members and assuming rates which varied with the member cooperatives. (Rosen, TR. Vol. XXIII, p. 6578). In reviewing the 1979 study (Exhibit C-Staff-24), Mr. Mulholland conceded that similar assumptions were used concerning the addition of generating facilities to the KG&E system, the KPL system, and the CTU system. (Mulholland, TR. Vol. C-3, pp. 821-825). For instance, the 1979 consultant study assumed a KG&E capacity plant calling for a 136 MW interest in each of Jeffrey Units 1 through 4, a 477 MW interest in Wolf Creek, a 477 MW interest in a 1990 nuclear unit, a 110 MW interest in each of four coal units in 1987, 1989, 1993, and 1995 and a 100 MW interest in a combustion turbine in 1994. (Mulholland, TR. Vol. C-3, p. 822-823). The 1980 study (Exhibit C-Staff-25) also assumed unrealistic capacity additions for the KG&E system (Mulholland, TR. Vol. C-3, pp. 828-829), calling for a 136 MW interest in each of the Jeffrey Units 1 through 4, a 477 MW interest in Wolf Creek, a 477 MW interest in a 1990 nuclear unit, an 85 MW interest in each of 4 coal units in 1987, 1989, 1993 and 1995, and a 75 MW interest in a combustion turbine in 1994.

16. Volume III, Section C, of the March 1977 KEPCo consultant study (Exhibit C-Staff-23) used extremely questionable assumptions regarding the capacity factors to be expected from generating facilities of investor-owned utilities thereby biasing the result in favor of Wolf Creek ownership. Mr. Mulholland testified that the capacity factor for LaCygne No. 1 was assumed to be 65 percent in 1984 and inexplicably dropped to 25 percent by 1994. For LaCygne No. 2 the capacity factor for 1984 was 9.5 percent, in 1987 it was 2 to 3 percent and in 1990 it was 0 percent. (Mulholland, TR. Vol. C-3, pp. 801-830). Similar reductions appear in the capacity factors for the Jeffrey units. Mr. Mulholland testified that the capacity factor shown for Jeffrey 1 in 1984 was 60 percent and for 1994 was 13 percent; for Jeffrey 2 in 1984 it was 45 percent and for 1994 it was 10.5 percent; for Jeffrey 3 in 1984 it was 31 percent and for 1994 it was 5 percent. But for Wolf Creek, Mr. Mulholland conceded that the study assumed a capacity factor of 75 percent in 1984 and 80 percent in 1994. Mr. Mulholland contended that the adjustments in capacity factors reflected the real world dispatch of the units that would occur in light of excess capacity, but he did indicate that a lower capacity factor for Wolf Creek would increase the costs of the plant for both KG&E and KEPCo. (Mulholland, TR. Vol. C-3, pp. 803-808). Mr. Mulholland admitted that when production of major coal units is reduced to the extent assumed by KEPCo consultants, there appears to be excess capacity and that he didn't remember the capacity factors used in the studies were so low. He also testified that bringing a new base load plant on line and shutting down all the other base load plants represents a sizable economic loss to the ratepayer. (Mulholland, TR. Vol. C-3, pp. 808-811).

17. The studies performed by KEPCo consultants in 1979 and 1980, Exhibits C-Staff-24 and 25, respectively, used assumptions for capacity factors that reflect significant reductions (although not as drastic as appeared in

the 1977 study) for the base load coal units of each utility. The capacity factors for Wolf Creek in those years were shown to average from 73.5 to 74.8 percent. (Mulholland, TR. Vol. C-3, pp. 825-826; 838-840). Mr. Mulholland contended that even though an economic loss accrues to the ratepayer from having major base load coal facilities run at a small percentage of their available capacity, the best thing to do at that point is to minimize generating costs by backing down all other baseload plants. (Mulholland, TR. Vol. C-3, pp. 840-841). Mr. Mulholland testified that the economic loss associated with reduction of existing base load plant capacity factors should be taken into account when deciding whether to construct a baseload nuclear unit. (TR. Vol. C-3, p. 842).

18. At the request of the Rural Electrification Administration and to further evaluate the feasibility of KEPCo's participation in Wolf Creek, Mr. Mulholland specified Wolf Creek cost-related criteria in an August 24, 1981, memo which were to be met by KEPCo (Exhibit C-Staff-29). Those criteria were:

1) The KEPCo program should be in a loss situation for no more than four years,

2) The maximum losses that should be sustained in any one year should not exceed one-half cent per kilowatt hour,

3) The losses during the early years of KEPCo's development should not average more than a third of a cent per kilowatt hour. (TR. Vol. C-3, p. 870).

Notwithstanding those criteria, he then indicated that (1) KEPCo currently was projecting losses for six years; (2) the maximum loss would be 2.5 cents per kwh (which Mr. Mulholland later corrected to .95 cents per kwh at page 924 of the transcript); and (3) the average losses during the early years would be 1.4 cents per kwh. (TR. Vol. C-3, p. 871-872). During cross-examination con-

cerning several charts attached to Exhibit C-Staff-29, Mr. Mulholland testified that (1) the maximum annual economic loss to KEPCo decreases with a decreasing interest in Wolf Creek (Mulholland, TR. Vol. C-3, p. 879); (2) KEPCo could minimize its loss by owning only 15 MW of Wolf Creek (Mulholland, TR. Vol. C-3, p. 880); (3) that the charts were favorably biased by including savings from the purchase of hydropower (Mulholland, TR. Vol. C-3, p. 888); (4) that if SPA power was not incorporated in the analysis, that Wolf Creek losses would appear even more dramatic (Mulholland, TR. Vol. C-3, p. 891); and (5) that KEPCo could reduce its losses by purchasing less than 5 percent of Wolf Creek (Mulholland, TR. Vol. C-3, p. 893).

19. A series of sensitivity analyses were prepared in May 1980 by KEPCo consultants. One of the variations involved criteria which altered the annual load growth rate from four percent to two percent. (Exhibit C-Staff-34). The result of that single alteration dropped the savings anticipated by KEPCo from use of hydropower and Wolf Creek ownership by $41 million. (Mulholland, TR. Vol. C-3, p. 909). Another of the sensitivities tested was to replace Wolf Creek ownership with participation in Iatan. (Mulholland, TR. Vol. C-3, p. 911). Mr. Mulholland verified that several assumptions of questionable value were used by KEPCo consultants: (1) The operation and maintenance cost for Iatan, a coal-fired plant, was assumed to be higher than that for Wolf Creek; and (2) the studies compared 13 years of costs of operation for Wolf Creek and 16 years of costs of operation for Iatan. (Mulholland, TR. Vol. C-3, p. 911-913). The results of that study indicated a savings resulting from participation in Iatan of $133 million. (Mulholland, TR. Vol. C-3, p. 914). Another 1980 sensitivity increased the cost of Wolf Creek to $1.8 billion. That analysis resulted in a reduction of savings from Wolf Creek and hydropower to $113 million, which is less than the savings ap-

parent if Iatan was purchased rather than Wolf Creek. (Mulholland, TR. Vol. C-3, p. 915).

20. Based upon the extensive record in the captioned dockets, the Commission finds reason to conclude with Dr. Rosen that each of the owners' Wolf Creek economic cost-benefit planning exercises were too infrequent and deficient in design and execution.

Economic Impact and Rate Comparisons

1. K.S.A. 1984 Supp. 66-128g(a)(9) requires consideration of whether resulting rates of a new facility in rate base "will have an adverse economic impact upon the people of Kansas." It is clear from the evidence presented that the rates resulting from total inclusion of Wolf Creek in rate base would be unreasonably high. KCPL states that a one time increase of 52 percent could be justified but has proposed a four year phase-in plan with a first year increase of $45.3 million, or 25 percent, with a cumulative increase over the base year rates of 64 percent. KG&E proposes a first year increase of $144.9 before fuel savings, a 39.4 percent increase, with a total increases over a five year phase-in period of 106 percent. Both companies have submitted the phase-in proposals in recognition of the fact that one time increases of 52 percent and 98 percent would be too large a burden on ratepayers. Numerous public witnesses in the non-technical public hearings not only confirmed the company's opinion that a one time increase was too heavy of a burden but also revealed strong opposition to the phase-in proposals and magnitude of the proposed first year increase.

2. KG&E also presented more detailed evidence concerning the rate impact of Wolf Creek through its witness Andrews of Cresap, McCormick and Paget (CMP). In Exhibit G-KGE-21, various comparisons of rates are made. Of particular interest to the Commission are the

comparisons of rates with and without Wolf Creek and the comparison of the proposed rates with other Kansas utilities' rates. With regard to the latter, Mr. Andrews compared the KG&E rates under its phase-in plan with Sunflower, Centel and KPL. The Sunflower rates assumed phase-in of the Holcomb plant and all three of the other utilities variable costs were escalated over time. The KG&E rates were shown to be significantly above KPL's and Centel's, especially at the end of the phase-in period, but below Sunflower's rates. Since we have found that a significant portion of Sunflower's Holcomb Plant represents excess capacity and have not accorded it full rate base treatment, the data contained in the exhibit is not totally accurate. Consequently it must be concluded from that exhibit that KG&E's rates would be significantly above average for Kansas utilities. Nor is it disputed that KG&E, with Wolf Creek, would move from having historically below average rates to above average rates on a national basis.

3. Regarding the with and without Wolf Creek comparisons, staff presented Exhibit G-Staff-35. This exhibit was based on the rates contained in the Andrew's exhibit and showed under those assumptions that Wolf Creek requires $1.4 billion more from ratepayers over its first nine years of service than would an alternative scenario of two coal-fired plants in 1989 and 1993. As staff notes in its brief, the latter scenario appears to recognize no need for additional capacity without Wolf Creek until 1989. These rate comparisons also confirm the observations of staff witness Rosen and other witnesses that the economic disadvantages caused by Wolf Creek are greatest in the early portions of its service life and that as the plant's high capital costs are depreciated, it becomes a relatively more economic source of energy.

4. Mr. Andrews also presented a section of the CMP report responding to K.S.A. 66-128g(a)(5) concerning the ability of the owners to sell wholesale power in the

competitive market. As staff observed in its brief, the recitation of the substantial and sustained but unsuccessful efforts to sell wholesale and participation power from WCGS indicates an inability up to the current time to compete in the wholesale market. The attempts to sell also, of course, reflect the owners' recognition of the substantial excess capacity represented by Wolf Creek.

5. Section A, Chapter V of the CMP Report concerns the economic impact of KG&E's proposed rates for residential, commercial and industrial users in the Wichita area. The CMP Report projects annual residential electrical service costs will remain a small portion of household income. With regard to the commercial sector, it is projected electric rates will grow only slightly as a percentage of gross sales. Similarly, the impact of the proposed rates is presented as a modest increase in gross sales and in KG&E's industrial consumers. The CMP Report concludes that the impact of the proposed rate increase will be cushioned by the projected growth in the economy and will remain a small proportion of household income and sales revenues.

6. The Commission is not convinced by the arguments set forth in the CMP Report. First of all, the CMP Report is best characterized as a market survey as opposed to an economic impact analysis. The analysis contained in the CMP Report is not, therefore, deemed as reliable as the analysis performed by other experts. Secondly, the growth projections contained in the CMP Report assume the Wichita economy will flourish during the period analyzed. It is only because the report assumes an 8.9 percent growth in the Wichita economy, and that residential income will more than double in the next ten years, that the conclusions of only a modest impact can be supported. The assumption of a flourishing Wichita economy is based on a less than sound assumption that the proposed rates will not have an adverse impact on the economy. The analysis contained in the CMP Report

projects an annual growth in residential disposable income of 9.2 percent. The result of an annual growth of 9.2 percent would bring median household disposable income in Wichita to nearly $70,000 per year within the next eight years. Only the most optimistic of forecasters could believe such growth will indeed occur. The growth projections contained in the CMP Report appear overly optimistic. The analysis contained in the CMP Report is limited to a small portion of the Kansas economy. The Wichita area economy is used as a surrogate for the KG&E service area. Little, if any, meaningful analysis of the impact on the agricultural sector is undertaken. Since farm income is currently depressed, the impact on the agricultural sector may be more severe than that projected on the CMP Report. Finally, no analysis is undertaken of the impact on those customers or economic entities which would not benefit from general economic growth. For example, residential consumers living on fixed incomes and governmental or quasi-governmental units whose budgets do not increase with general economic growth are not included in the analysis. These types of customers are components in the economic infrastructure of the KG&E service area and must be considered in any analysis of the economic impact of the proposed rate increase.

7. An economic impact study based upon an empirical investigation was offered into evidence by Mr. Gregory Palast, on behalf of the Alliance for Liveable Electric Rates. Mr. Palast's analysis quantifies the impact of the proposed rate increase on: Wichita area employment, manufacturing, the aircraft industry, commercial business, housing and household income, government tax revenues, street lighting and operations. In general terms, Mr. Palast is of the opinion the rate increase proposed by KG&E could not be implemented, even with an extended phase-in plan, without harming the Wichita economy. (Palast, TR. Vol. B-7, pp. 2272 and 2366).

8. Mr. Palast's conclusions were supported by the testimony of witnesses Allen, Ewy, and Weir-Enegren. Dr. Larry Langemeir also supported the conclusions of Mr. Palast with specific reference to the impact of icreased rates on the farm economy.

9. James Cobler presented testimony concerning the financial impact of the proposed rate increase upon agencies of the State of Kansas, which ultimately fall upon the citizens of Kansas. The transcripts from public hearings conducted throughout the KG&E service area are replete with testimony concerning the adverse economic impact that would result from a substantial increase in charges for electric service.

10. Intervenor Vulcan Materials Company also presented testimony by its Wichita plant manager, Mr. Boyd, who indicated that electricity was the largest single cost for the plant and that Vulcan could not sustain a doubling of rates in a five year period, as proposed. (TR. Vol. B-7, pp. 2454-55).

11. There is no doubt in the Commission's mind from the testimony presented that full inclusion of Wolf Creek in the rate base, even over a five year phase-in period, would have a significantly adverse impact on ratepayers and the economy of Kansas.

Risk Assumption and Sharing

1. Before turning to the third set of factors concerning risks accepted by the applicant, we should review the testimony concerning the proper role of regulation in determining rates. Dr. Sturgeon on behalf of the Electric Shock Coalition, testified that "one of the goals of public utility regulation is to create the same results within the regulated industry as would occur in a competitive market. In a competitive market, if a firm does not use the efficient alternatives, it must either exit the market or receive a lower than normal return." (TR. Vol. XXVI,

p. 1646). Mr. Drazen, on behalf of the Hospital and Industrial Intervenors, also testified that even without a showing of imprudence, shareholders should bear a portion of the cost of Wolf Creek since regulation is a surrogate for competition (Drazen, TR. B-4, pp. 1001-1002).

2. Dr. Rosen, in his testimony on risk sharing also discussed ways in which regulation can take the place of competition in the instant context. He stated that "in theory the discipline of the market helps ensure that investment decisions are made judiciously in the competitive market." (TR. Vol. XXXIII, p. 6714). Dr. Rosen also observed that for the regulated electric utility industry there are two principle means of achieving this effect. The first is an on-going process of critical review of utility planning with some state regulatory commissions holding long range planning hearings on a regular basis. The second process involves regulatory actions which provide incentives and disincentives. For example, requiring utilities to bear some of the costs of excess and costly new capacity encourages management to engage in more careful and critical planning.

3. Applicants, through witnesses Phillips and Roen, argue that public utilities cannot be judged with the same standards as might be appropriate for unregulated businesses. Public utilities have an obligation, unlike non-regulated firms, to serve present and future demand and, concurrently, have revenue requirements based on actual costs. Applicant argues that because of the long period of time over which investments are made, there are increased risks for electric utilities for which the regulatory process has traditionally afforded surety.

4. The Commission cannot embrace totally the views that regulation should produce the same results as the competitive market place. As applicants observe, there are significant distinctions between the obligations of

regulated and non-regulated firms. However, we agree with Dr. Rosen and other parties' witnesses that regulation must provide a mechanism which encourages good management planning. A comparison with the free market model in this light is of some value and is consistent with legislative directions to compare rates resulting from capacity additions with other utilities' rates.

5. We believe, moreover, that the "risk-sharing" approach advocated by Dr. Rosen has considerable merit. This is especially true in this complex case with much conflicting evidence. The Commission finds of particular relevance Dr. Rosen's testimony on evaluation of planning prudence:

> Q. In evaluating the planning process, is it not difficult to distinguish between imprudence and just poor planning?
>
> A. Yes, it is. This is one reason why I believe that there is a need for clear, equitable, and strong risk sharing policies to be established by regulatory commissions to be able to deal with the consequences of poor planning, even if no imprudence is demonstrated. The standard for imprudence in investments is generally quite restrictive, referring to losses which were sustained due to negligence, wastefulness, or dishonesty. In some cases, utilities periodically did the correct type of study, yet the assumptions or methods used were so unrealistic that the resultant management investment decisions were so unreasonable that they may have bordered on negligent. Another source of potential imprudence would be grossly insufficient study or project review altogether.
>
> Q. How, then, would a regulatory agency use the six criteria that you have elaborated above to decide upon a precise sharing of excess costs?

A. One cannot be completely precise in these matters. Sometimes public utility commissions have decided that, short of any outstanding consideration, a 50/50 sharing between ratepayers and stockholders of the amount under dispute is appropriate, but other proportional splits have been adopted. Sometimes a return *of* an investment is granted (depreciation or amortization), but not a return *on* the investment (it is not included in rate base). I believe it is reasonable to say that significant deviations from a 50/50 sharing formula relative to total expected economic losses should be justified. For instance, stockholders might be required to bear a greater proportion of the burdens if the company planning process that led to the losses was particularly poor, or if company decisions did not seem continually sensitive to the need to keep rates as low as possible.

(Rosen, TR. Vol. XXIII, pp. 6718-20).

6. With reference to risk sharing, the Legislature has also explicitly instructed the Commission to examine "whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest to Kansas." K.S.A. 1984 Supp. 66-128(a)(11). The Commission believes that the applicants have, in fact, accepted enormous risks in connection with the Wolf Creek project. As observed by Dr. Rosen:

> Constructing a large new facility involves numerous risks. First, capital cost estimates for baseload units have consistently proved to be low. Second, achieving fuel savings sufficient to offset high capital cost requires that baseload units be operated a substantial portion of the year. Finally, if load growth and fuel price projections prove to be inaccurate, a costly baseload facility may not realize the benefits for which it was originally planned.

> All of the factors I just mentioned are particularly applicable to nuclear units because of their long construction periods, large unit size, and unexpectedly poor operating performance and high operating costs. (TR. Vol. XXIII, p. 6721).

The estimated costs of the plant have grown from the original 1973 estimate of $525 million to the "Definitive Estimate" of $1.033 billion in December of 1976 to the latest official July 1984 estimate of $2.904 billion or over $2600/KW. The actual final cost will likely be over $3 billion. Since the November 1981 estimate of $1.952 billion, the costs have increased more than $900 per kilowatt. As discussed by several witnesses, during this time of increasing cost estimates for completion, the growth in demand forecasted was also decreasing while the economics of coal fired generation began to look more favorable. The unfavorable picture became, of course, even gloomier when KEPCo reduced its ownership share and attempts to sell participation or energy to other utilities failed. The applicant despite these trends did not appear to seriously consider the possibility of cancellation.

7. Indeed, KG&E management and stockholders positively affirmed the decision to continue the project on two occasions in the face of serious concerns by some stockholders. Exhibit G-Staff-36, the May 21, 1980 Notice of Annual Meeting of Shareholders contained the following shareholder proposal:

> STOCKHOLDER PROPOSAL NO. 1 to be presented at the annual meeting of stockholders of the Kansas Gas and Electric Company, May 21, 1980.
>
> We recommend to the Board of Directors that construction of the Wolf Creek Unit No. 1 nuclear power plant near Burlington, Kansas be stopped.
>
> STATEMENT IN SUPPORT OF THE PROPOSAL:
>
> In our opinion, undue burdens on the stockholders are presented by these financial uncertainties:

a) accidents such as Three Mile Island has experienced,

b) as yet unknown safety requirements that will be imposed by the Nuclear Regulatory Commission,

c) cost overruns and construction occasioned by faulty work may not be allowed as part of the rate base and might have to be borne by stockholders,

d) rising costs of repairs,

e) cost and availability of nuclear fuel, and

f) cost of decommissioning the plant.

We agree with the Company that operating in a socially responsible way is important. Are we socially responsible if we continue constructing a nuclear plant which, in our opinion, will:

a) possibly double the cost per unit of electricity,

b) expose workers during its operation, repair, and decommissioning to above normal radiation with its attendant increased risks of cancer and genetic damage,

c) use larger quantities of water having first priority over community needs even in times of drought,

d) emit radiation over neighboring farms which can enter plants and animals, become part of the food chain, and increase risks to the health of this and future generations, and

e) create thousands of cubic feet of radioactive waste when we do not know how to transport or store it safely?

Exhibit G-Staff-38, the May 27, 1981 Notice of Annual Meeting, contained a similar shareholder proposal:

STOCKHOLDER PROPOSAL NO. 3.a to be presented at the annual meeting of stockholders of the Kansas Gas and Electric Company, May 27, 1981.

We recommend to the Board of Directors that construction of the Wolf Creek Unit No. 1 nuclear power plant near Burlington, Kansas be stopped.

1. The *cost of construction continues to mushroom* from the projections first given stockholders. The Cresap, McCormack & Paget report, commissioned by the Kansas Corporation Commission, states that safety-related regulatory and licensing requirements will effectively triple the costs (from 1973) in plants loading fuel in 1986.

   If the sale of 17% of Wolf Creek to Kansas Electric Power Cooperatives is not successful, it is unlikely that, KG&E will be able to generate its share of the 1.1 billion dollars needed to complete Wolf Creek. If KEPCo does buy and is only liable for costs up to 1.5 billion instead of the projected 1.7 billion dollars, this will put an unfair burden on other stockholders.

2. The Investor Responsibility Research Center, Inc. has stated that the ability of other Kansas utilities to contract for cheap Wyoming coal may place power from *Wolf Creek at a competitive disadvantage* once the plant is completed, if construction, operation, or fuel costs, rise considerably. In our opinion, this will, in all probability, be the case with Wolf Creek.

3. The *need for Wolf Creek can be obviated,* according to many authorities, by promoting all possible conservation efforts.

STATEMENT IN SUPPORT OF THE PROPOSAL:

1. It is imperative that Kansas citizens be protected from any build-up of radioactive fission products in the environment where they can become concentrated in the food chain. The cost of safely containing Wolf Creek's low level radioactive waste and approximately 30 metric tons per year of spent fuel (high level radioactivity) on the site or of transporting it in safe and guarded shipments to Federal repositories in other parts of the country, will greatly increase the cost of the fuel cycle.

2. Uranium ore supplies are limited and uranium 235 fuel will rise in cost as easily accessible supplies near depletion.

3. Although $400,000,000.00 has been calculated into Wolf Creek's total construction cost for decommissioning, Metropolitan Edison has estimated that it will cost $1,000,000,000.00 (1 billion dollars) and five years to decommission their Three Mile Island reactor.

4. According to the Energy Project at the Harvard Business School (1979), *the United States with a serious commitment to conservation, might well consume 30 to 40% less energy than it does now.* This was borne out by a program in Los Angeles, initiated after the Arab Oil embargo went into effect. Total electrical usage dropped by 17% in one year.

8. In response to both shareholders proposals the company's Board of Directors stated that the decision to build Wolf Creek was sound, the sunk investment was large and would be wasted and without Wolf Creek, the company would be unable to meet demand for electricity by the late 1980s. Mr. Cadman, under cross-examination by staff, conceded that the decision to continue construction

was based more on concerns about fuel availability than on the need for capacity. Of the voting shares, 82.7 percent cast votes against the 1980 shareholder proposal and 75.8 percent against the 1981 proposal to halt construction.

9. The Commission agrees with staff's observation that it is difficult to imagine more compelling facts indicating company shareholder assumption of the risks of continuing in light of changing economics.

C. *FINDINGS AND CONCLUSIONS*

1. After careful consideration of the above facts and the entire record, the Commission concludes that the portion of Wolf Creek which is used and required to be used is an extraordinarily expensive means of providing base load capacity which could have been provided at a more reasonable cost. The rates resulting from full rate base treatment of Wolf Creek would be unreasonably high for ratepayers to pay and unreasonably high compared to other electric utility rates in Kansas. Imposition of such rates would have a detrimental impact on ratepayers and the general economics of the state. Although the lower fuel and operating costs of a nuclear plant may ultimately result in favorable rates, this would not occur until some time in the future. The decision to continue construction of Wolf Creek, especially after 1981, was not based on adequate or realistic analysis and review and appears to have stemmed from institutional inertia. Certainly by the end of 1981, applicants should have been acutely aware that the capital costs of Wolf Creek were becoming unreasonably high and that the overall economic benefits were subject to serious question. Faced with changing economics of the benefits of Wolf Creek, the applicant and its shareholders continued to assume the risks involved in a project of such magnitude. We believe in light of these facts that simple exclusion of the physical excess capacity of Wolf Creek

would still result in an unreasonable valuation of property in rate base.

2. One of our considerations deserves further comment. Even under the best of circumstances, a high priced capital addition to rate base such as a generating facility causes some inequities among various generations of ratepayers. As mentioned previously, the overall benefits to ratepayers of such a facility increase over time as the capital costs decrease through accrued depreciation. Even if there are overall economic savings or benefits over the life of the plant, those benefits may never be felt or realized by the earlier generations who pay for the higher capital costs at the beginning of the plant's life. This intergenerational inequity occurs to some extent relative to each item of investment included in a utility's rate base, but normally the overall effect is moderated by the mixture of plant in rate base at various stages of economic life. In the instant case, however, Wolf Creek investment would dominate the plant-in-service rate base account of the applicant, so that such inequity would not be effectively offset. Also, in the instant case, of course, are serious questions of whether there would be an overall benefit over the life of Wolf Creek. For both reasons serious intergenerational inequities would result without further adjustments.

3. The Commission has reviewed with interest the examples of other state commissions' actions cited in witnesses' testimony and the parties' briefs with regard to excess capacity and risk sharing. We would also note the Kansas case of *Kansas Power & Light Co. v. Kansas Corporation Commission*, 619 P.2d 320; 5 Kan. App 2d 514 (1981). In that case, the Court of Appeals determined that the benefits of capital gains resulting from the sale of an office building should not accrue solely to the shareholders of the company. Although capital gains warrant different considerations than economic losses associated with an excessively expensive generation facility,

that case appears to recognize the principle that equitable division of economic consequences between shareholders and ratepayers is appropriate. Other states have taken actions which range from exclusion of all physical excess capacity above a fixed reserve margin to a limitation of the capital costs of a facility. These excessive costs have been totally excluded or have been shared between ratepayers and shareholders by adjustments to return. We believe that a combination of approaches is warranted in this case. In view of the fact that the decision to construct and build Wolf Creek was not supported by a need for physical capacity, a physical excess capacity adjustment is undeniably appropriate. In addition, the exorbitant capital costs of Wolf Creek must be addressed by some type of adjustment. Although evidence was presented, primarily by Dr. Rosen and Dr. Komanoff, that at some point the Wolf Creek project should have been cancelled, we cannot conclude with the absolute certainty which we believe is necessary that such conclusion would necessarily have been made. If such were the case, a total exclusion of excessive capital costs from rate base would be warranted. We believe instead that no return should be allowed on that portion of Wolf Creek which is not used and required to be used and represents unreasonably high capital costs. By allowing a return of the costs through depreciation but no return on the costs, we are dividing the economic consequence between ratepayers and shareholders in an equitable manner.

4. We are not basing this decision on a "prudence determination." Although substantial evidence has been presented that the excessive costs of Wolf Creek are the consequence of imprudent decisions and actions of the applicant, we do not make such a finding today. We do believe that KG&E has not performed adequately throughout much of the period during which Wolf Creek has been built and that more rigorous reviews of likely consequences and alternatives may have avoided the exorbitant costs associated with Wolf Creek. We do find that sub-

stantial risks were involved in the Wolf Creek project and a significant portion of the economic consequences should be shared by the company.

5. As noted previously, applicant contends that while the Commission is free to choose among several valuation methodologies, the methodology chosen should be uniformly applied to all of the utility's property. The Commission disagrees. First, we note that the statutory provisions enacted by H.B. 2927, particularly those in K.S.A. 1984 Supp. 66-128g, appear to be directed primarily at new additions to electric generating capacity. The Commission in this proceeding is determining the value of such an addition to applicant's system. It has in the past already determined the reasonable value of other assets which were determined to be used or required to be used and included them in rate base accordingly. No evidence has been presented in this proceeding that the reasonable value of such other facilities is greater than such historical original costs. Furthermore, the Commission would be most reluctant to determine that when the "economic" value of an asset increases above its historical book value, the assets should be revalued for ratemaking purposes. If, as occurs in the unregulated industries, the utility assumed all risks that the "value" of a facility was less than historical costs, it might be appropriate for the rewards associated with a greater value to accrue to the utility. The approach taken today, however, is a far cry from imposing the excessive costs of Wolf Creek totally on the company. The shareholders will recover almost all the costs of Wolf Creek through depreciation; they will simply not earn as great a reward through return as they would if the reasonable value of Wolf Creek were equal to its historical value. The other assets already included in rate base at original cost have, of course, already received a return which did not include any risk sharing. With regard to the Wolf Creek plant excluded today, its value may increase with changes in

the comparative economics of coal generating facilities. If, for example, coal transportation costs escalate or "acid rain" concerns cause increased costs for coal generation facilities in the future, the figure adopted today could increase. Absent very compelling evidence, however, we cannot envision that value as being greater than the historical costs. Furthermore, the Commission is inclined to believe that that valuation of plant included in rate base should not change over time although that need not be addressed today.

6. With regard to the potential increases in the value of Wolf Creek due to its economic comparison with coal facilities, the Commission would make a few additional observations. We do not, of course, intend by establishment of this standard to create incentives for utilities to operate their coal plants in a less efficient manner. Any changes in operational characteristics will be subjected to close scrutiny. Indeed, as noted in another portion of this order, we are encouraging the utilities to improve efficiencies of their systems. Some parties have suggested system problems, such as minimum loading constraints, are created or exacerbated by the addition of Wolf Creek and have proposed various remedies. One such possibility is the creation of an ongoing performance standard program with both incentives and disincentives. The Commission believes that such programs are worth exploring and intends to do so.

7. The Commission's failure to adopt today any of the proposals should not be misconstrued as lack of concern about the alleged problems with the applicant's system configuration and operations. In fact, the Commission is inclined to agree that the Applicant's system has not only too much capacity but also too much base load capacity which causes system inefficiency such as the minimum load constraints discussed by a number of witnesses. Although this has been somewhat considered in our decision today, no additional adjustments have been

made. The Commission does not believe that there is sufficient evidence on the quantification of economic inefficiencies or appropriate remedies to take further action at this time.

8. There was also specific testimony on the need to revise the various standards in the current Energy Cost Adjustment (ECA) clause as a result of the operation of the WCGS. Those standards relating to line loss limits, thermal efficiency and fuel mix in the ECA clause potentially need adjustments but we do not believe there was sufficient evidence to make determinations at this time. We consequently intend to treat ECA tariffs filed in compliance with this order as temporary and to set the matter for hearing subsequently.

9. In determining the proper valuation for capital costs, the Commission has concluded that the proper value is what a coal-fired plant meeting the applicant's needs would have cost as suggested by Intervenor Mary Margaret Rogers. We believe that capital costs above this benchmark were part of the risks accepted by shareholders. There is a wide range of such costs in the record. We will mention a few.

10. Witness Komanoff's testimony contained a variety of figures for a coal plant including $639/KW for the estimated completion of JEC 4 in 1983 dollars (TR. Vol. XXXIV, p. 9980); $816/KW from a 1980 estimate for JEC 4 completion in the Spring of 1986 (*Ibid*, 10155-10156); and $900-$950/KW for an expensive coal plant with scrubbers in 1982 direct construction costs (*Ibid*, 10215).

11. Dr Rosen, in his analysis, assumed the costs of $1,983/KW for a 265 MW unit on line in 1989 and $1,770/KW for a second unit in 1993 with a 6 percent rate of inflation. (TR. Vol. XXIII, p. 6663). If brought down to 1985 present value, these costs would be around $1,570/KW and $1,110/KW respectively. A larger coal

plant with better economies of scale would, of course, be expected to result in lower costs.

12. Mr. Roen testified in regard to Exhibit G-Staff-29, a Bus Bar study done in 1981 by Mr. Lucas of KGE. A referenced 680 megawatt coal unit for completion in 1984 was assumed to cost $800 to $1,200 per megawatt pursuant to a study performed by Gilbert Commonwealth on behalf of MOKAN in 1980 and 1981. (TR. Vol. VII, p. 1772-1773). One of the reasons for the wide range was allowance for environmental control devices. The other annual studies performed by KGE contained in Exhibits G-Staff 24-28 all assumed a lower cost for a coal plant, of course, ranging from $570/Kw in 1975 to $850/Kw in the 1980 study.

13. Mr. Doyle, in his testimony, referred to a Black & Veatch study performed for KCPL. That report indicated a 650-700 megawatt coal plant for completion in 1985 to comply with environmental laws would cost $1,120 per kilowatt. (TR. Vol. XIII, p. 3585-3587).

14. Mr. Ferraro, sponsoring portions of the CMP report, Exhibit G-KGE-21, noted the United Engineers and Constructors (UEOC) studies reflected on Exhibit IV-5 of the CMP report. A 1975 study estimated the cost of a 1,000 MW coal-fired plant commencing operation in January 1985 as $750/Kw.

15. In contrast to the above historical estimates, there is the actual experience of coal fired plants recently operational in Kansas. The Holcomb plant, owned by Sunflower Electric Cooperative cost approximately $1500 per kilowatt and is considered a relatively expensive plant. The third unit of Jeffrey Energy Center, considered an unusually successful construction project by at least one witness (Komanoff, TR. Vol. XXXIV, 10158) cost less than $600/kw.

16. The Commission has concluded that a reasonable value for Wolf Creek capacity should reflect both the cost

estimates for a coal plant which were prevalent during the construction of Wolf Creek and the actual experience of recent facilities. There is, of course, no precise manner for determining the proper value. We believe, however, that $1150 to $1250/Kw represents a reasonable range for an appropriate value. This is substantially more than most of the estimates used in the owners planning studies and the JEC Unit 3 cost which did not require pollution control devices. It is of course less than the Holcomb per kilowatt cost, however, Holcomb did not benefit from the economies a larger unit would produce.

17. It is of some worth to compare this $1150-$1250/Kw range with the increases in costs which have occured for Wolf Creek construction beginning with the November 1981 estimate which should have given the owners serious concerns about the continued economics of Wolf Creek. From the prior estimate of $1.687 billion the costs have increased over $1.3 billion or over $1180/Kw. Also of some interest for comparison purposes is the figure of $1490 per Kw which owners' witness Fairchild stated was the incremental cost of increasing the size of Wolf Creek from 800 Mw to 1150 Mw, based on a total plant cost of $2.9 billion (TR. Vol. XXXII, p. 9632-33).

18. In evaluating the appropriate capital cost to be imputed to Wolf Creek, we also need to consider the lower operating costs of Wolf Creek in comparison to coal plants. There are, of course, a variety of plant comparisons which could be made. We have examined the generation costs of Wolf Creek, including the decommissioning costs we have adopted today, as compared to various coal facilities on the KG&E and KCPL systems. Schedules RAR 4.1 and 4.3 of Exhibit G-Staff-127 set out the generation costs associated with the coal plants which provided electricity in 1984 for KG&E and KCPL. These costs range from 1.5¢/Kwh for the Iatan unit to 3.1¢/Kwh for the Hawthorn units. The LaCygne units, jointly owned by the companies, showed costs in 1984 of 2.3¢/

Kwh for Unit 1 and 1.7¢/KWH for Unit 2. The respective average coal costs for the companies are 1.90¢/Kwh for KG&E and 2.00¢/Kwh for KCPL.

19. These costs may be used to determine the savings which might be expected from Wolf Creek over a coal facility by taking the difference per Kwh with Wolf Creek's estimated generation cost, approximately 1.58¢/Kwh. (See KGE Application, Section 8, Schedule 4). Assuming the capacity factor anticipated by the operating partner for Wolf Creek of 61 percent (Lucas, TR. Vol. XII, p. 3105, 3126) a considerable range of savings result. For example, LaCygne 1 generating costs of 2.3¢/Kwh compared to Wolf Creek results in an annual generation savings of $43,600,000. However, the LaCygne 2 comparison would show a savings of only slightly more than $7,200,000. When these generating cost savings are translated into capital costs, the range of approximately $174/KW to $29/KW results. Use of the average coal plant costs for the two companies results in a savings in a range from $19,340,000 to $25,400,000. The respective company average coal plant cost figure comparisons result in a range of $77/Kw to $102/Kw capital cost figure. We believe this range is most appropriate for our purposes here. We recognize that using the average coal generating costs does not correspond precisely with the fact that we have allowed a capital cost for current vintage coal plants which have lower generation costs. Such a more precise analysis would, of course, show less savings for Wolf Creek. However, for purposes of this case, we believe that a rough reflection of the generation costs being displaced by Wolf Creek is appropriate. A figure toward the lower end of the range would, however, be appropriate to compensate for the inclusion of older vintage plant generation figures. We also note that the generation costs for Wolf Creek do not include any reflection of future capital additions. The appropriate estimate for such costs was hotly disputed, but inclusion of

any costs would, of course, reduce the relative value of the plant.

20. The combinaiton of the $1150-$1250/Kw range for reasonable costs of coal plants combined with the $77/Kw to $102/Kw range for reflection of generation cost savings results in a total range of $1227 to $1352/Kw as a reasonable value for a comparable coal plant. We believe that the midpoint of this range of $1290/Kw is reasonable in this case as a value for Wolf Creek for which a return should be allowed.

21. The Commission recognizes that this valuation of Wolf Creek has necessarily been judgmental. As noted in applicants' briefs, however, "the determination of whether a plant is 'required to be used,' 'useful' or 'reasonably necessary' is not susceptible to a simple cookbook approach." (KCPL Brief, p. 19; KGE Brief, p. C-9) Applicants have urged that reliance solely on comparative economics or physical reserve margin would improperly narrow the application of the 'used and required to be used" standard and have urged primary consideration of management prudence. The Commission, as set forth above, has considered all three factors and believes that this decision reflects the appropriate valuation of that portion of Wolf Creek which is used and required to be used.

22. K.S.A. 1984 Supp. 66-128e provides in part that:

> In the event the commission finds that a portion of the costs were attributable either to investment in excess capacity which were incurred due to lack of prudence in facility planning or were incurred due to lack of prudence in plant acquisition, construction or operation, the commission shall exclude that portion of the carrying or finance charges incurred after the date of its findings, and no part of the carrying or finance costs excluded shall ever be or become part of the reasonable value of public utility property so used and required to be used.

23. As stated above, the Commission is not basing its decision today on a finding of imprudence except for the exclusion regarding unreasonable increases in construction costs. The Commission, therefore, is not required to exclude permanently the "carrying and finance charges" associated with physical and economic excess capacity adjustments we make today, although we have the discretion to do so under K.S.A. 1984 Supp. 66-128b. That statute provides as follows:

> The commission may require a public utility to defer inclusion of all or any portion of the reasonable value of property determined not currently used and required to be used and may require the phase-in of such value over any period of time and in such increments as it determines to be appropriate. If the commission requires a public utility to defer the inclusion of any portion of such reasonable value and orders a phase-in of such value, it may exclude any or all of the carrying or finance costs incurred after the date of the determination and throughout the period of any deferral or phase-in as so ordered.

24. Under the decisions we make today, all of Wolf Creek, except for that portion resulting from construction cost overruns and schedule delays, will be subject to recovery by depreciation expense. The physical and economic excess capacity exclusions are, however, ineligible for a return on investment. Consequently, those amounts are today not fully included in rate base. Although those exclusions may well someday be fully in rate base, we are unable to project when that will occur. Therefore, we must decide on a reasonable treatment of the carrying costs for the excluded amounts.

25. We find that some carrying costs associated with the debt and preferred stock costs of capital should be accrued. Such carrying costs, however, should only be those associated with the portion of Wolf Creek excluded on a physical excess capacity basis valued at the same

economic value as the portion included in rate base. This amount should be capitalized by applicant at the overall weighted cost of debt and preferred stock and recorded on a net-of-tax basis as a debit to FERC Account 186, Miscellaneous Deferred Debits and a credit to Account 421, Other Income and Deductions. Amortization of this amount for ratemaking purposes will commence with the Commission's final order determining permanent rates associated with Wolf Creek. The amortization period shall be over the then remaining life of the Wolf Creek plant on a straight line basis. No interest compounding shall be allowed on the balance in the deferral account. Changes made by the Commission in the future on the amount of Wolf Creek which is excluded will, of course, result in a prospective modification of the deferral calculations and amounts.

VII. *DECOMMISSIONING*

A. *INTRODUCTION*

1. Of all the issues in this important rate case, one of the most unique and most vexing is the issue of decommissioning. Decommissioning of a nuclear power plant is the removal of contaminant radioactive material down to residue levels considered acceptable for permitting unrestricted use of the plant and its site. While the regulation of activities regulated to decommissioning of a nuclear power plant has traditionally been within the purview of the Nuclear Regulatory Commission (NRC), the actual collection of decommissioning funds by a regulated utility is accomplished through financial arrangements subject to approval by a utility regulatory commission.

2. Pursuant to the requirements of House Bill 2927, the Commission must determine whether a utility having an ownership interest in the Wolf Creek Nuclear Power Plant has provided a method to assure that the cost of any decommissioning of the facility will be paid for by

the utility. Three issues must be addressed by the Commission:

(1) the alternatives available for physical decommissioning of the facility;

(2) the total estimated cost of decommissioning the facility; and

(3) the appropriate method of collecting funds for ultimate use in decommissioning the facility.

B. *PHYSICAL DECOMMISSIONING*

3. Under present technology, there are five basic alternatives for decommissioning nuclear facilities:

(a) mothballing

(b) entombment—with delayed dismantling

(c) DECON—immediate dismantling

(d) SAFESTOR—mothballed/delayed dismantling

(e) ENTOMB—entombment/delayed dismantling

4. Both Neil Talbot, staff witness and Thomas LaGuardia, witness for the partner applicants recommended the DECON alternatives as being the current, state-of-the-art alternative. No witness disputed this testimony. We have no difficulty in approving the DECON method of decommissioning at this time, subject to future modification as events and technology dictate.

C. *COST*

5. Both Messrs. LaGuardia and Talbot have suggested total estimated cost figures to be used as an assumption for revenue requirement purposes. Mr. LaGuardia did a site specific study tailored specifically for Wolf Creek. He is regarded as an eminent authority in the field, having been directly involved in the decommissioning of BONUS and Elk River reactors, having co-authored the U.S. Department of Energy's "Decommissioning Hand-

book" and having prepared numerous site-specific decommissioning cost estimates. (*LaGuardia, TR. Vol. V, p. 1079*). Mr. LaGuardia's estimated cost figures are based on a 40-year life of plant, are in constant 1983 dollars, do not include inflation and include a 25 percent contingency factor. (ibid). Both Mr. LaGuardia and Mr. Talbot proposed a regular, periodic review of the total estimated decommissioning costs.

6. Staff Witness Talbot disagreed sharply with Mr. LaGuardia's estimated decommissioning costs. Mr. Talbot is not a recognized authority in the field and did not do a site-specific study. Mr. Talbot emphasized trends over time in the decommissioning area and reviewed the wide range of uncertainties involved, the fluctuating range of cost estimates and the consistent tendency of industry cost estimates to rise over time. Mr. Talbot concluded that 300 million dollars (in 1983 dollars) was a more realistic cost estimate. On questions from the bench during his rebuttal testiminy, Mr. LaGuardia updated his 1983 estimates to 1985 dollars and indicated ". . . it would certainly be higher . . . 130, 140, 150 million is possible." (TR. Vol. XXX, p. 8956).

7. The evidence is clear that decommissioning cost estimates are inherently uncertain and speculative. Mr. Talbot's testimony graphically outlined the historical escalation in cost estimates. To date, there has been no actual experience decommissioning a large, commercial nuclear plant and cost estimates have traditionally been low. Also, the current shortage (indeed non-existence) of the sites for the disposal of large quantities of radioactive waste makes detailed estimates of shipping distance and cost virtually impossible.

8. On the other hand, Mr. LaGuardia's study was tailored specifically to Wolf Creek in that it utilized Wolf Creek design and elevation drawings and plant description. The different plant characteristics of nuclear units

are such that a site-specific study is clearly of more value than general trend observations, however valid.

9. We believe the most realistic cost estimate, at this point, to be the mid-point of Mr. LaGuardia's updated estimate—$140 million.

D. *LIFE OF PLANT*

10. Although there was conflicting testimony on the estimated life of the plant, we believe that the NRC and general industry estimates of 30 years is a valid and realistic life to utilize for purposes of decommissioning estimates.

E. *FUNDING OF DECOMMISSIONING*

11. The Nuclear Regulatory Commission has identified six major alternatives available to utilities for funding decommissioning. These can be divided into two groups: plant specific approaches and pooled approaches. At this time, no pooled approaches are available to companies. Examples of pooled approaches include surety bonds, decommissioning insurance and funding for general tax revenues.

12. Of the plant specific approaches, there are three basic alternatives for funding decommissioning: prepayment; contributions to an external trust during the life of the plant; and contributions retained by the companies in internal reserves. These are identified as:

(a) prepaid plan,

(b) external trust fund,

(c) unsegregated internal fund,

(d) segregated internal fund.

Staff is proposing the external fund method be employed by all the Wolf Creek partners.

13. The NRC has suggested five criteria for evaluating alternative financing mechanisms for nuclear decommissioning:

(a) degree of assurance that the funds will actually be available at the time of decommissioning,

(b) cost,

(c) intergenerational equity—that the cost of decommissioning be spread equitably to all ratepayers throughout the life of the facility,

(d) flexibility—responsiveness to changes in the basic assumptions,

(e) adaptability—ability of the plant to adapt to different ownership and jurisdictional arrangements. See Wood, "Assuring the Availability of Funds for Decommissioning Nuclear Facilities," NRC Report, March, 1983.

14. In determining the appropriate funding mechanism to be employed, the testimony of the witnesses must be viewed in the context of the NRC criteria.

15. Applicant KG&E is, therefore, ordered to file tariffs to begin collecting its proportionate share of $140 million over a 30-year time frame for the purpose of physical decommissioning of the Wolf Creek Generating Station.

16. Applicant KG&E proposed, and staff agreed, that an external funding mechanism be created to manage and invest the decommissioning funds. Applicant KG&E is directed to immediately seek proposal, for an external funding mechanism and to submit a plan for Commission approval as soon as possible.

17. Consistent with testimony from the witnesses, the Commission will review the decommissioning component of this Order at least every three years.

VIII. *WOLF CREEK O & M EXPENSE*

1. Included in the application in this matter was applicant's share of the $64.9 million in Operations and Maintenance expenses projected for Wolf Creek, not including nuclear fuel expenses. In the common hearing portion of these proceedings, staff proposed two adjustments. The first was to exclude $202,989 in EEI assessments for TMI cleanup costs. The other adjustment was to adjust out the salary and fringe benefits of the Project Director who no longer works on the Wolf Creek site. The two adjustments totaled $588,564.

2. Applicant did not contest staff's adjustment and no specific adjustments were proposed by the parties. The Commission finds these adjustments appropriate and reasonable and accordingly adopts them. Applicant's share of these adjustments is $260,439. The Commission would expect staff to evaluate the actual O&M expenses in the permanent case to determine their reasonableness.

3. The Commission would make one additional observation with regard to operational and maintenance expenses of the Wolf Creek Generating Station. We have accepted the operating partner's estimate of these costs based on testimony that those sums are necessary and reasonable to insure the reliable and safe operation of the plant. We recognize that the decisions made today will place financial stress on the owners and particularly the operating partner KG&E. Under questioning by a Commissioner, Mr. Cadman stated that even under such an eventuality, no cutbacks would be made on the expenses which could affect the safe operation of Wolf Creek. The Commission agrees with Mr. Cadman that safe reliable operation of this nuclear plant is of utmost importance. We do not expect KG&E or the other owners to take any action which would raise concerns in this regard.

IX. *WOLF CREEK DEPRECIATION RATE*

1. Applicants in this case originally requested a depreciation rate of 3.53 percent based on a forty-year life. The Applicants' witness, James Aikman, noted that remaining life depreciation was more appropriate than straight line rates but at the beginning of the assets life, there was no difference in the resulting rates. Staff recommended a straight line depreciation rate of 3.44 percent. As sponsored by witness Melinda Mosher, this rate was based on a span life of thirty years, annual interim retirements of 12 percent and a net salvage rate for interim retirements of -6 percent. Her rate did not allow for forecasted interim additions under the theory that to do so would allow for recovery of investment not yet made.

2. Applicants stipulated to staff's proposal for purposes of this case only and without implication for the useful life of the plant. Other parties also stipulated to the staff recommendation. The Commission finds the staff depreciation rate of 3.44 percent reasonable and adopts the same. We should note that in making this finding, it is unnecessary to determine whether remaining life depreciation or the straight line method is most appropriate for Wolf Creek, since the rates would be the same under either at this time. We expect to address this issue some time in the future and would merely indicate that in view of the unique nature of this investment we would not foreclose use of remaining life.

X. *MISCELLANEOUS*

A. *FUNDING FOR PAYMENT OF DIVIDENDS*

1. From 1977 to 1984 the owner utilities found themselves in a restrictive financial situation. Nevertheless, dividends were not only paid but increased during this time period. (Exhibit G-KGE-21, p. V-9, V-12, V-17, and Exhibit V-5). In light of the financial condition of the

owner utilities, it has been argued dividend payments should have been suspended.

2. If it is determined that an electric utility has borrowed funds in order to pay dividends and the borrowing to pay dividends was imprudent, the Commission may adjust the utility's revenue requirement accordingly. K.S.A. 66-128e.

3. There has been no conclusive evidence that KG&E externally financed the payment of dividends during the construction of the Wolf Creek Generating Station. Over the course of the construction program, there appears to have been adequate internal cash flow to meet the cash payment of dividends, though the company may have borrowed funds to meet temporary shortfalls.

4. The Commission is unable to conclude the payment of dividends during construction of the Wolf Creek Generating Station was imprudent. The prudence of dividend payments must be assessed in light of the circumstances that existed at the time the payments were made and irrespective of the prudence of the decision to invest in, or continue investing in, the Wolf Creek Generating Station. Under the conditions that existed it is doubtful suspending dividend payments would have improved the owner utilities' financial conditions or would have reduced the ultimate cost of building Wolf Creek. If dividends had not been paid during the construction phase of the Wolf Creek Generating Station, the owners would likely have been unable to issue common stock at or near its book value.

5. Although the payment of dividends may not have been imprudent, we must express concern about the decision to increase dividends from 1977 to 1984. Particularly during the latter stages of the project, increasing dividends may not have been in the best interest of the company, the stockholders or the ratepayers. If dividends had not been increased, additional funds would have been available for internal funding of construction costs.

6. It is not clear that the decision to make dividend payments *per se*, during construction of the Wolf Creek Generating Station, was an imprudent decision on the part of the owner utilities.

B. *IMPOSITION OF WOLF CREEK FINES AND PENALTIES AND RATEMAKING TREATMENT THEREOF*

1. NRC Inspection Reports reveal KG&E's quality assurance function was ineffective in the early years of construction of Wolf Creek. (Exhibit G-Staff-63, p. VIII-22).

2. Quality related concerns resulted in increased monitoring by the NRC, the issuance of citations and the imposition of civil penalties. (Exhibit G-Staff-63, p. XI-32, Schedule VIII-6, p. 1-21). For example, in 1983 the owner utilities were assessed a $40,000 civil penalty for failure to adequately control activities affecting the quality of safety related systems. (Exhibit G-Staff-63, p. XI-33).

3. With regard to the proper ratemaking treatment of such fines and penalties, the Commission is not inclined to allow expenses associated with the payment of fines and penalties to be passed through to the ratepayer. Pursuant to K.S.A. 66-128i, fines and penalties assessed by the NRC are presumed to have resulted from a lack of prudence and if the presumption is not rebutted by competent evidence, the Commission may reduce the utilities' revenue requirements accordingly.

4. In this case, the fines assessed by the NRC were properly excluded from the utilities' rate requests. (Brown, TR. Vol. IV, p. 1285).

C. *LEASING OF NUCLEAR FUEL*

1. Both staff and applicant presented testimony concerning nuclear fuel costs. Staff witness Talbot concluded that in general the applicant has procured nuclear fuel

in a reasonable and prudent manner and that the resulting nuclear fuel expenses are reasonable, once the credits arising from the Westinghouse case settlement are taken into account. Tabot did suggest, however, that KG&E had not adequately explored the possible benefits of a trust-leasing arrangement for nuclear fuel. The record does reflect that KCPL's use of such an arrangement may account for 7.5 percent lower nuclear fuel costs for KCPL than KG&E.

2. KG&E witness Hansen, however, argued under cross-examination that there are no benefits since there would be offsetting higher AFUDC rates. The Commission did not find Mr. Hansen's short analysis clear and, therefore, believes a more comprehensive report is desirable. We, therefore, order KG&E to submit within six months a report as to whether KG&E and its ratepayers could obtain any benefits from a nuclear fuel trust leasing arrangement.

D. *PERIODIC REPORTS*

1. Inherent uncertainties surrounding commercial operation of the state's first nuclear generating facility require the rate relief granted to be interim in nature, subject to true-up at a subsequent proceeding. Without historic data, operating and maintenance costs must be projected. The fact that a plant the size of Wolf Creek has not been retired creates great uncertainty about the cost of decommissioning. The effect Wolf Creek will have on the owner utilities' overall generating mix have prompted concerns about fuel savings, reliability, the need for power and the cost of replacement power. These and other issues cannot be addressed with the desired level of certainty until actual operating data is available.

2. The existence of excess generating capacity and the decision to disallow costs associated with the amount of capacity not required to be used has magnified the importance of accurately assessing and continually evaluat-

ing system peak demand and load growth. If the demand for capacity grows, and a greater amount of the Wolf Creek Generating Facility is required to be used, appropriate adjustments may be made.

3. In light of these uncertainties, and in anticipation of subsequent true-up proceedings, periodic review and oversight of certain Wolf Creek related issues will be necessary.

4. Pursuant to the authority vested in the Commission under K.S.A. 66-101, *et seq.*, KG&E, is hereby instructed to file formal quarterly reports concerning the Wolf Creek Generating Station's: 1) equivalent availability; 2) capacity factor; 3) scheduled and forced outages; 4) operating and maintenance expenses; and 5) decommissioning estimates. In additiion, the quarterly reports must include an evaluation of total system peak demand, total system load growth and information concerning insurance coverage for property damage, liability and replacement power attributed to incidents at Wolf Creek.

E. *JOINT UNIT COMMITMENT AND ECONOMIC DISPATCH*

1. Pursuant to the utilities' obligation to provide, and the Commission's authority to require reasonably efficient and sufficient service, the Commission has the responsibility to monitor the utilization of generating facilities of jurisdictional utilites.

2. The commercal operation of the Wolf Creek Generating Station will alter or otherwise affect the unit commitment and dispatch practices of KG&E, KCPL and other interconnected utilities.

3. The objective being to minimize costs while ensuring adequate and reliable service, the Commission encourages jurisdictional utilities to conduct a comprehensive evaluation of centralized dispatch, joint unit commit-

ment and other means of improving coordination in wholesale markets and increasing economic efficiency and overall reliability.

4. The optimal utilization of generating facilities and the reliability of existing generating facilities and available reserves should also be considered in the utilities' evaluation of methods to enhance economic coordination among interconnected utilities.

XI. *KG&E COMPANY—SPECIFIC ISSUES*

A. *BUDGET PROCESS AND TEST YEAR*

1. There is no contested issue with regard to the KG&E budgeting process or the formulation of the test year used for purposes of this proceeding. At this juncture, however, it may be helpful to review the formulation of the test year and rate base periods utilized by KG&E for purposes of the rate application.

2. Pursuant to an agreement entered into between the applicant, staff and the parties hereto, KG&E bases its application on a fully projected test year commencing January 1, 1985, and ending December 31, 1985. The test year is adjusted to reflect a full year of commercial operation of WCGS.

3. With the exception of fuel inventory and cash working capital, the value of the rate base was to be calculated using a thirteen-month average. The agreement provides that fuel inventory and cash working capital amounts would be calculated according to the principles adopted by the Commission in Docket No. 136,380-U, KG&E's last previous rate case. The thirteen-month period for the rate base calculation is the thirteen-month period ending December 31, 1985.

4. In addition, the agreement provides that the applicant would make available historical data for the twelve-month period prior to March 31, 1984, and a com-

plete reconciliation of the historic period to the projected test year.

B. *INTERIM RATE RELIEF*

1. It is significant to note that the Commission normally utilizes an historic test year as a basis to project rate base, operating expenses and income of rate request applicants. Implicit in that practice is a recognition that use of the historic test year concept reduces the conjecture inherent in setting rates based on estimations of future performance.

2. Unfortunately, the anticipated commercial operation of WCGS created a situation in which the use of an historic test year was not practical for this case. Instead, the application is based on KG&E budgetd levels of expenditures, investment and revenue. Staff witness Duzel Yates testified that use of a forecasted test year requires assumptions regarding budgeted expenses and revenues which may vary significantly from actual experience. (TR. Vol. B-4, p. 1120).

3. For example, there are uncertainties about the actual level of Operations and Maintenance (O&M) expenses incurred for the operation of the Wolf Creek plant. As readily conceded by KG&E, the O&M budget, as a projection only, will likely vary from actual experience. The actual expenses will depend on the operation of the plant, personnel performance and regulatory requirements. Furthermore, the owners have flexibility in the number of employees who will finally be hired out of the budgeted 400 positions and in the amount of consulting work to be done. This flexibility only highlights the fact that the level of O&M expenses is uncertain and actual expenses could vary substantially.

4. Staff recommends interim rate relief be granted so that permanent rates can be based on the inherently more reliable historic data, adjusted for known and de-

terminable items. Staff's recommendation is not contested by KG&E.

5. We note that in addition to the concerns raised by staff, certain aspects of our findings regarding the common issues also provide justification for interim rate relief as a result of these proceedings. Actual levels of fuel savings, capacity factors and demand growth occasioned by actual operations of WCGS are factors which ought to be considered in setting permanent rates. Therefore, because we find staff's recommendation reasonable and because the impact of commercial operation of WCGS should be considered in establishing permanent rates, the rates established herein shall be interim. Additionally, we find that a six-month period of commercial operation of WCGS is sufficient to provide a period of historical operations upon which to set permanent rates. The six month period shall commence as of the initial date of WCGS commercial operation, September 3, 1985.

C. *NON-WOLF CREEK RATE BASE MATTERS*

1. With the exception of the WCGS issues discussed above, and certain aspects of the jurisdictional allocation process discussed below, there is only one contested issue with regard to KG&E's jurisdictional rate base. Staff proposed a total of eight adjustments to the KG&E jurisdictional rate base.

2. Staff Adjustment No. 1 reflects staff's jurisdictional allocation methodology as sponsored by staff witness Decker and is discussed in a subsequent section of this order entitled "Jurisdictional Allocations." As noted in our discussion of KG&E's jurisdictional allocations, while we find merit in Mr. Decker's proposals, we are rejecting staff's allocation methodology. Therefore, Staff Adjustment No. 1 is rejected.

3. Staff Adjustment No. 2 is a fallout adjustment and is necessary because staff's adjustment to rate base will

affect the gross utility plant in service (excluding general plant). As a result, the No. 4 allocation ratio, general plant, is revised. Therefore, we find an adjustment of $9,287 appropriate.

4. Staff Adjustment No. 3 reflects the application of staff's recommended depreciation rate for nuclear production plant. The owners did not contest this staff recommendation. We adopt staff's Adjustment No. 3 and approve of the methodology used to quantify staff's depreciation rate, which we adopted earlier in this order. However, because we are rejecting staff's jurisdictional allocation factors, the adjustment is modified to reflect our adopted allocation factors. Therefore, we find a decrease to the reserve for depreciation of $1,140,982 appropriate. Likewise, Kansas jurisdictional rate base will increase $1,140,982.

5. Staff Adjustment No. 4 eliminates the carrying costs and depreciation expense associated with the Jeffrey Energy Center of which KG&E is a part owner. KG&E proposes to include in rate base as spare parts inventory a portion of its investment in a turbine originally purchased for use in constructing Jeffrey Energy Center Unit 4. Construction of Jeffrey Energy Center Unit 4 has been indefinitely postponed by the owners of that particular facility. In the meantime, the owners are utilizing the turbine generator for Unit 4 as spare parts for the other three operating units at Jeffrey Energy Center.

6. Staff contends that KG&E has not demonstrated that Unit 4 is used and required to be used in KG&E's spare parts inventory and, therefore, opposes rate base treatment of the Unit 4 turbine generator.

7. Staff witness Novin testified in support of staff's recommendation to exclude the Unit 4 turbine from spare parts inventory. According to Mr. Novin, KG&E has been unable to establish, by way of an engineering or economic study, that the inclusion of the Unit 4 parts

in inventory is justified. Additionally, Mr. Novin asserts that the Unit 4 parts are not included in the normal Jeffrey Energy Center spare parts system and that KG&E has used arbitrary factors to allocate the Unit 4 parts to the spare parts inventory. The essence of Mr. Novin's testimony appears to state that KG&E has simply not carried its burden of establishing the necessity of carrying the Unit 4 turbine generator in spare parts inventory.

8. We note that the Jeffrey Energy Center owners have allocated only 59.5% of the cost of the Unit 4 turbine generator to the spare parts inventory. Accordingly, only 59.5% of the cost of the Unite 4 turbine generator is included in rate base under the KG&E proposal. KG&E witness Macklin testified in support of the inclusion of Unit 4 in rate base. Through the testimony of Mr. Macklin, it is evident that portions of the Unit 4 turbine generator, or similar parts, have been utilized in the past and are currently utilized as spare parts at Jeffrey Energy Center. Additionally, it appears that the use of such parts have in the past and could potentially avoid costly economic losses associated with prolonged outages at Jeffrey Energy Center. The allocation of only 59.5% of the cost of the turbine generator to inventory appears to reflect a careful determination by the Jeffrey Energy Center owners as to which of the various turbine generator components are not only useful, but are also necessary as spare parts.

9. The Commission finds that the inclusion in spare parts inventory of 59.5% of the Unit 4 turbine generator is reasonable and, therefore, the Staff Adjustment No. 4 is rejected and the proposal of KG&E to include that portion of the Unit 4 turbine generator in rate base as spare parts inventory is deemed reasonable and is accepted.

10. Staff Adjustment No. 5 eliminates investments associated with the Neosho Lake Lodge that the Applicant

included in its utility plant in service. The Neosho Lake Lodge portion of total company plant in service is $65,016, or $61,108 Kansas jurisdictional. The related reserve for depreciation is $51,784 total company, or $49,513 Kansas jurisdictional. KG&E has eliminated the expenses associated with the operation of the Neosho Lodge. Staff Adjustment No. 5 provides for consistent treatment of KG&E's investment in the Neosho Lodge by removing this asset from rate base. Staff's quantification of the adjustment results in a $11,595 reduction in rate base. KG&E did not contest staff's Adjustment No. 5. The Commission finds staff's adjustment reasonable in principle and adopts staff's quantification of the adjustment. Therefore, staff's Adjustment No. 5 is adopted. Due to our findings regarding jurisdictional allocation factors, the adjustment is modified to a reduction in rate base of $12,025.

11. Staff Adjustment No. 6 decreases total company utility plant in service by $6,800,000, or $6,393,360 on a Kansas jurisdictional basis. The purpose of the adjustment is to reflect savings realized from the energy produced from pre-commercial operation of the WCGS. By order dated March 11, 1985, in Docket Nos. 120,924-U, 142,098-U and 144,918-U, the Commission found that the savings realized from the production of test energy at WCGS shall be credited on a monthly basis to capital account 107, construction work in progress.

12. Staff witness Wess testified that the $6.8 million estimated savings resulting from the production of test energy at WCGS is based on a KG&E *estimate*. Mr. Wess also testified that the Applicant did not include the savings realized from testing WCGS as a reduction to any capital account. KG&E did not contest or rebut Mr. Wess' testimony in this regard. Therefore, we adopt staff Adjustment No. 6 in principle. Because we are rejecting staff's jurisdictional allocation methodology, the quantification of the adjustment as per staff's recom-

mendation will change. Based on the estimated savings of $6.8 million and applying the approved jurisdictional allocation methodology, staff Adjustment No. 6 is appropriately stated as a $6,406,524 reduction in KG&E's rate base.

13. Staff Adjustment No. 7 to rate base is a quantification of the PMA adjustment discussed previously in this order. In addition, Adjustment No. 7 is dependent on our decision related to jurisdictional allocation factors. We adopt staff Adjustment No. 7 to rate base as modified here, because it properly reflects the earlier adopted PMA adjustment and our adopted allocation factors by reducing rate base $120,757,693.

14. Staff Adjustment No. 8 to rate base would increase net cash working capital, and thus rate base, by $627,972. This adjustment reflects changes due to adjustments to the applicant's operations expense. We direct that Adjustment No. 8 be modified to reflect our decisions regarding operations expense. We adopt staff Adjustment No. 8, as modified herein, to increase net cash working capital, and thus rate base, by $122,388.

D. *NON-WOLF CREEK OPERATIONS ISSUES*

1. Staff proposed a total of ten adjustments to KG&E's operations expense. Staff Adjustment No. 1 to operations reflects staff's jurisdictional allocation methodology as proposed by staff witness Decker. As noted previously, we do not adopt staff's proposed jurisdictional allocation methodology as discussed in another part of this order. Therefore, we are rejecting staff Adjustment No. 1 to operations.

2. Staff Adjustment No. 2 to operations increases net operating income by $1,099,468. This adjustment reflects the effect of the depreciation rate that was sponsored by staff witness Mosher and is uncontested by the owners. We find Adjustment No. 4 to operations appropriate and

we adopt it as a corresponding adjustment to our earlier adopted depreciation rate. However, because we are rejecting staff's jurisdictional allocation methodology the quantification of the adjustment is modified to reflect our adopted allocation methodology and is restated as $1,140,982.

3. Staff Adjustment No. 3 to operations reduces depreciation and property tax expenses. This adjustment corresponds to staff Adjustment No. 7 to rate base, which quantifies the PMA adjustment adopted by the Commission. Since we have earlier adopted a revision of PMA's proposed adjustment, we find that staff Adjustment No. 3 to operations must be modified to reflect our earlier modification of the PMA proposed adjustment. Additionally, because we reject staff's proposed jurisdictional allocation methodology, staff Adjustment No. 3 to operations must be further modified.

4. The portion of staff Adjustment No. 3 to operations relating to property tax expense was contested by KG&E at hearing. KG&E witness Prothro testified that ad valorem or property taxes for KG&E are a legitimate cost of operating and owning property in any taxing district and cannot be avoided. He also stated that a reduction in KG&E's assets will not necessarily avoid property taxes, but will merely redistribute the burden among taxpayers. Mr. Prothro apparently believes that the intent of staff in excluding property tax associated with the PMA adjustment is to adjust the property tax expense to the actual property tax liability which KG&E will incur. Staff has indicated, however, and we find, that the purpose of the exclusion was to exclude property tax expense associated with an investment which staff contends should not be allowed in rate base. KG&E's estimate of property tax expense is an original cost calculation. According to staff, and we have so found, a portion of that cost was imprudently incurred. It reasonably follows that a similar portion of property tax is attributable to an imprudent investment.

5. The Commission agrees that it would be inequitable to require the ratepayer to bear the burden of expenses incurred due to imprudent investment. The Commission, therefore, finds staff's exclusion of property tax expense associated with the PMA adjustment to be reasonable and hereby adopts it.

6. Incorporating the Commission's findings with regard to the PMA adjustment and the jurisdictional allocation factors, staff Adjustment No. 3 is hereby appropriately determined to be $5,037,354.

7. Staff Adjustment No. 4 to operations reduces depreciation expense by $219,932. Staff Adjustment No. 4 to operations is a corresponding adjustment to staff Adjustment No. 6 to rate base to reflect the value of WCGS test energy. Staff Adjustment No. 4 to operations is uncontested and is hereby adopted. However, the adjustment should be modified to incorporate the same assumptions used to modify staff Adjustment No. 6 to rate base. Therefore, we find that the modified adjustment should be $228,236 and we adopt staff Adjustment No. 4 to operations accordingly.

8. Staff Adjustment No. 5 to operations would increase production expense by $505,828 to increase the annual provision for decommissioning of WCGS. We have discussed the allowance for decommissioning expense in another section of this order. In conformity with our earlier findings, we find staff's adjustment reasonable in principal, but find that the annual provision for decommissioning expense should be $828,000. Therefore, staff's adjustment is now a decrease of $547,368 to the annual provision for decommissioning expense.

9. Staff Adjustment No. 6 increases operating revenues by $2,278,290, or $1,847,465 on a Kansas jurisdictional basis. The adjustment reflects the rental income to be received from the lease of a 345 Kv transmission line to KCPL. The adjustment is uncontested and is

hereby adopted in principle. However, because of our findings regarding jurisdictional allocation factors, the adjustment should be modified to reflect those findings. We find an appropriate adjustment is an increase in jurisdictional revenue of $1,887,791.

10. Staff Adjustment No. 7 to operations is uncontested by KG&E. This adjustment quantifies the impact of staff witness Yates' adjustment to Wolf Creek Operations and Maintenance Expenses. Because we have previously adopted staff witness Yates' adjustment regarding Wolf Creek Operation and Maintenance Expenses, we hereby adopt Adjustment No. 7 to operations, in principal. Again, however, because we are rejecting staff's proposed jurisdictional allocation factors, the quantification of staff Adjustment No. 7 to operations should be modified. Therefore, the adjustment is modified from the proposed amount of $260,439 to an amount of $269,915.

11. Staff Adjustment No. 8 to operations decreases depreciation expense by $82,177. Staff Adjustment No. 8 to operations is a corresponding adjustment to the proposed staff adjustment eliminating from rate base certain portions of the Jeffrey Energy Center Unit 4 turbine generator. Because we reject staff's adjustment to rate base concerning the Unit 4 turbine generator, we accordingly reject staff Adjustment No. 8 to operations.

12. Staff Adjustment No. 9 reduces electric production expenses by $4,852,514. The purpose of staff Adjustment No. 9 is to reflect Operation and Maintenance levels for the LaCygne Unit Nos. 1 and 2 as projected by KCPL for the 1985 budgeted test year. According to staff witness Wess, KG&E and KCPL each own 50% of LaCygne Unit Nos. 1 and 2. However, both companies utilized remarkably different assumptions concerning the use of LaCygne Unit No. 1 during the test year. KCPL assumes that LaCygne Unit No. 1 will be operated only seasonally from May through September. In contrast,

KG&E, in its application, assumes that LaCygne Unit No. 1 will be on line from October through April, a total of 2,218 hours out of a possible 5,088 hours. Accordingly, the two companies propose dramatic differences in La-Cygne Operation and Maintenance Expense for the 1985 test year. Mr. Wess notes that KCPL is the operating partner of the two LaCygne units. Therefore, he reasons, KCPL's assumptions regarding future operations should be given greater weight. Staff's adjustment restates the KG&E Operations and Maintenance Expense for La-Cygne Units 1 and 2 to the levels used by KCPL in its 1985 test year.

13. KG&E witness Macklin testified that staff's adjustment regarding the LaCygne station is inappropriate. Mr. Macklin notes that LaCygne Unit 1 will actually be in operation for at least eight months during 1985 and, therefore, concludes that KG&E's assumptions are correct and no adjustment to the LaCygne operations expense is warranted. Mr. Macklin also contends that since the rates established here will probably be interim rates, subject to true up, whatever actually happens during 1985 is properly included in KG&E's cost of service.

14. Although LaCygne Unit No. 1 will actually operate more than seasonally in 1985, the Commission notes that WCGS did not actually operate during all of 1985. The KG&E application is based on a projected test year in which commercial operation of WCGS is assumed for the entire period. It appears that KCPL scheduled seasonal operation of LaCygne in anticipation of the commercial operation of WCGS. That LaCygne Unit 1 will actually operate at least eight months during 1985 appears to be irrelevant when WCGS is not actually in operation and rates are based on a projected test year in which full operation of WCGS is assumed.

15. We find Mr. Macklin's reliance on the establishment of interim rates here to justify inclusion of excess operations expense unreasonable. It is likely, and in

light of our previous findings it is assured, that permanent rates will not be established on the basis of pre-WCGS commercial operation.

16. In light of KCPL's assumptions regarding seasonal operation of LaCygne, and also in light of the historically troubled operating history of LaCygne Unit No. 1, the Commission agrees with Mr. Wess' proposal to adopt the KCPL projections of seasonal LaCygne Unit No. 1 operation. We, therefore, adopt staff Adjustment No. 9 to operations in principal. Again, however, because of our findings regarding jurisdictional allocation, we find that the adjustment should be modified to an adjustment of $4,848,691.

17. Staff Adjustment No. 10 adjusts current income taxes to reflect the earlier proposed staff adjustments to operations. This adjustment may be viewed as a "fall-out" adjustment. To the extent we have adopted or rejected other adjustments to operations in this order, we necessarily adopt staff Adjustment No. 10 to operations. We note, however, that Adjustment No. 10 to operations will be modified to reflect our earlier findings regarding the other adjustments to operations and to reflect our findings regarding jurisdictional allocations.

18. One further adjustment to operations must be considered in Docket No. 142,098-U, staff asserted that the amount for rate case expense allowed in both dockets was being underestimated by KG&E. KG&E had estimated a total of $2,078,500 for both, or $1,163,500 for the generic portion and $915,000 for the company specific case.

19. From information recently received from Applicant, $4,719,214 has been charged for both dockets through July 1985. Applicant had proposed a four year amortization period or $519,625 per year being charged to operating expenses. If a four year amortization period is used for the new updated total of $4,719,200, then $1,179,800 would be amortized per year to operating

expenses or an increase of $660,175. This would increase the revenue requirement approximately $660,000.

20. We hereby adopt KG&E's proposal for amortization of the rate case expense over a four year period. Additionally, we accept $4,719,214 as the rate case expense for purposes of this order. Therefore, the applicant's allowance for rate case expense is increased $600,175.

E. *RATE OF RETURN*

1. Two witnesses presented testimony in the area of rate of return. Mr. Michael York testified on behalf of the Commission staff and Dr. William Avera testified on behalf of KG&E. To evaluate the rate of return for KG&E, staff and KG&E used the discounted cash flow (DCF) methodology. The DCF has been the predominant method of calculating the rate of return on common equity before this Commission and was the accepted methodology in the last KG&E rate case.

2. In performing its DCF analysis, staff used market data which is directly available because KG&E is a publicly traded utility. First, staff identified the dividend yield by using publications which publish dividend estimates. Staff estimated the dividends over the next four quarters to be 59 cents in the second quarter of 1985, 59 cents in the third quarter of 1985, 59 cents in the fourth quarter of 1985 and 61 cents in the first quarter of 1986.

3. Second, staff selected a price of a recent representative day. Staff chose March 21, 1985, after tracking the prices during the period of analysis to avoid the anomalies which can bias a single day price choice. The price at the close of trading on March 21, 1985, was $18.75. Staff used a current price rather than an average price because an investor purchases at a current price, not at an average annual, semi-annual or monthly price. The

Commission believes that the current price is an appropriate price to use in the DCF formula because it represents all the information that is currntly available to a company's investors regarding future profitability and the risk of the company. Therefore, the yield investors require on any date is the discount rate that equates the price and the expected stream of future dividends on that base.

4. Third, staff estimated the growth rate for use in the DCF formula by averaging both historic growth rates and future growth estimates to arrive at an estimated average growth rate for KG&E of 2.64 percent. The Commission finds that staff's estimate of growth was appropriate to use in the DCF analysis because investors review both historical and future growth projections when making investment decisions.

5. Last, staff estimated the market cost of equity. Staff obtained an unadjusted figure of 16.07 percent and then adjusted it to reflect the effect on stock price of floating new stock, market information and supply and demand pressures. This adjustment resulted in a reduction in the relative stock price over the last six issuances of 1.68 percent. The adusted dividend yield was then added to the growth figure to obtain the best estimate of the adjusted cost of equity, 16.31 percent. After arriving at 16.31 percent, staff took into account flotation costs and arrived at a weighted cost of 16.25 percent. The Commission finds that staff properly took into account that flotation costs are incurred only in the acquisition of common stock while equity funds are obtained through both common stock and retained earnings in arriving at a weighted cost of 16.25 percent.

6. Staff stated in its testimony that based on the information it received, it would typically recommend a 16.25 percent return on equity, with a range of reasonableness about that estimate of 15.60 to 16.60 percent.

However, staff reviewed KG&E's requested return on equity of 15.50 percent which resulted from KG&E's policy decisions and concluded that 15.50 percent would allow KG&E a fair and reasonable return on equity. Using 15.50 percent as the return on equity, staff recommended that the overall rate of return of 11.9949 percent be found the fair rate of return to allow KG&E in this rate case.

7. When KG&E performed its DCF analysis, a 17.00 percent return on common equity and an overall rate of return of 12.56 percent were obtained. However, this was not the overall rate of return which KG&E utilized in developing its revenue requirements and it is not the rate of return which KG&E requested in this rate case. KG&E, as a policy decision, chose to utilize the rate of return on equity of 15.50 percent to develop its revenue requirements, with an 11.98 percent requested overall rate of return.

8. KG&E, in its brief at pages VII-27 through VII-29, expressed the opinion that its proposed 15.5 percent rate of return would only be relevant if the Commission approved a first-year rate increase of $144.9 million. The Commission disagrees with KG&E's contention and finds that a 15.5 percent rate of return appropriately reflects a return on the prudently incurred investment. *Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia*, 262 U.S. 1176 (1922) states on page 1182:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs *for the convenience of the public*. . . (Emphasis added).

9. The Commission has determined that imprudently incurred investment, investment not employed for the convenience of the public, should not be considered when determining the appropriate amount upon which to base a rate of return.

10. The Commission is of the opinion that staff's recommendation takes into account that the market reflects all of the information available to investors about the company. Therefore, staff's recommendation appropriately reflected investors' perceptions of the risk of the company, including the possibility that imprudently incurred investment could be excluded from rate base. Investors and forecasters are aware of the range of potential outcomes of nuclear plant rate cases, they are also aware of the potential effects of nuclear rate case decisions on the utility companies and they take those potential effects into account when making investment decisions and forecasting determinations. Because the current market price reflects KG&E investors' perceptions of the potential outcomes of the rate case, the Commission finds that no adjustment for the outcome is necessary.

11. The Commission considered all of the evidence presented in this case when reviewing the 15.50 percent recommendation for return on equity proposed by KG&E and concurred with by staff and, in its informed judgment, finds that it is the appropriate rate of return for KG&E in this rate case.

F. *REVENUE DEFICIENCY*

When a rate of return of 11.9949 percent is applied to the previously adopted Kansas jurisdictional rate base of $994,803,019, and a 2 percent additional return is applied to the $983,570 investment in load control equipment, the result is an operating income requirement of $119,346,471. When compared to test year operating income as adjusted and adopted herein, we find applicant has additional operating income requirements totaling $83,918,351. Assuming an appropriate income tax factor, Applicant's gross annual revenue deficiency is $166,653,463, as calculated in the Appendix to this order.

G. *JURISDICTIONAL ALLOCATIONS AND RATE DESIGN*

1. In determining an appropriate rate design, we must decide what portion of the total Kansas jurisdictional revenue requirement should be collected from each rate class. Several considerations must go into determining class revenue requirements. Among these considerations are costs, historical rates, value of service and ability to pay. For this order, we divide the rate design decision into three general areas:

(a) Jurisdictional Allocations

(b) Distribution of Increase

(c) Design of Rates and Rate Components

JURISDICTIONAL ALLOCATIONS:

2. Testimony on jurisdictional allocations came primarily from applicant and staff. However, James I. Sturgeon on direct testimony indicated applicant's jurisdictional allocation methodology was appropriate only if the retail and wholesale customers imposed similar load requirements. (TR. Vol. B-5, p. 1913, et seq.). On rebuttal, Charles W. Terrill for Kansas Electric Power Cooperative, Inc., contended that staff's adjustment to applicant's methodology was inappropriate and that the Southwestern Power Administration (SPA) hydroelectric peaking power received by KEPCo should receive full credit in the allocation process. (TR. Vol. B-4, p. 1421).

3. KG&E used a 12 coincident peak allocation factor for production and transmission plant and expenses. Staff generally followed the company's methodology in calculating allocation factors. However, staff recommended one significant change to the methodology used by applicant to calculate production and transmission allocation factors. Staff recommended that some of the wholesale customers' non-KG&E resources not receive full

credit in the allocation process. This position was vigorously opposed by applicant and KEPCo on the record and in briefs. Staff maintained that applicant's methodology valued too highly some of the other power and energy resources of wholesale customers. (TR. Vol. B-5, p. 1452 et seq.). Applicant and KEPCo argued that staff's reasoning was too theoretical and that real demands, not theoretical demands, should be the basis for allocating costs. (Lehman, TR. Vol. B-3, p. 750).

4. The Commission has traditionally utilized a 12 CP production allocation methodology for this company and concludes that a continuation of the use of this methodology is appropriate. The issue of the usefulness or value of SPA power and Generating Municipal owned production plant has never been a direct issue in previous proceedings before this body. While staff's methodology is thoughtful and has merit, we believe more study is necessary. Further review can be given to staff's methodology in the permanent case. For purposes of this case, applicant's jurisdictional allocation ratios are accepted and should be used for determining total revenue requirements.

5. We also note that applicant's jurisdictional methodology for production and transmission allocation differs from its retail production and transmission allocation methodology. If in the permanent case, applicant's methodologies differ, applicant should justify using dissimilar methodologies in both allocation processes.

DISTRIBUTION OF INCREASE

6. Applicant and staff proposed different approaches for spreading an increase in jurisdictional revenues. Both applicant and staff indicate a desire for equity. Applicant asserts that one of its prime objectives is the design of cost based rates and that the objective can be met if the increase in revenue requirement is al-

located so that the rates of return for all classes are approximately equal. (TR. Vol. B-3, p. 711).

7. Applicant proposed a gradual equalization of rates of return among classes: the percentage increase to classes would range from 8.3 percent to 50 percent. (TR. ibid).

8. Staff, on the other hand, has recommended that each customer class receive the same percentage increase. Staff asserts that this ensures that no class receives a disproportionate increase. Staff also indicated that because rates are interim that a proportional increase in rates is the most reasonable. An analysis of actual expenses and plant use would provide a better indication of cost to serve the various customer groups. (TR. Vol. B-5, p. 1465, et seq.).

9. As a general proposition, we are persuaded that because the rates established in compliance with this order will be interim rates, we should limit the increases to customer classes to the overall percentage increase received by the company. We feel that this will ensure that no class receives a disproportionate increase. In addition, it has been the historical practice of this Commission to increase rates proportionately when large additions to rate base have occurred.

DESIGN OF RATES AND RATE COMPONENTS

10. There were a number of rate design issues raised by applicant. Applicant's rate proposal included a number of changes to the existing rate structure. The Commission's decision on those proposals will be addressed in this section of the order.

11. Staff's general recommendation was to retain the current rate structure and simply increase each rate component by an equal percentage.

12. Many of applicant's rate proposals are laudable and noteworthy. However, the level of the increase in

total revenue requirement causes us to conclude that significant restructuring of rates is not appropriate at this time. Significant departures from the current rate structure could cause some customers to receive disproportionate increases. Additional information regarding the need for and probable impact of significant rate restructuring should be provided to support future proposed changes in rates. We, therefore, order that current tariffs be retained, with the exceptions noted below, and that all rate components be increased by the overall class percentage increases.

13. One issue in which applicant, staff and intervenors were all interested was that of customer charges. Applicant advocated what was characterized as a "full cost customer charge." Applicant's "full cost customer charge" is based upon a "minimum system" concept or analysis of distribution plant costs. The "minimum system" method classifies as customer-related the amount which would have been invested if all poles, wires and transformers were of minimum size necessary to provide service. The minimum investment is determined by taking the existing system at a minimum size and then valuing it on an embedded cost basis. (Lehman, TR. Vol. B-3, p. 719).

14. Staff opposed applicant's methodology in favor of a methodology that more narrowly defined customer related plant and expenses. Staff asserted that its methodology more nearly reflected the cost of adding a customer to the system, based upon average embedded costs. (Decker, TR. Vol. B-5, p. 1471).

15. We are persuaded that customer charges for this case should be proportionately increased by the class percentage increase. In general, we agree with the staff position that a more narrow view of customer related plant and expenses is appropriate. This is consistent with previous Commission decisions on customer charges

and there was no compelling evidence introduced to alter this position. We find a proportional increase in customer charges to be reasonable since in some instances this will increase customer charges to a level near that consistent with staff's recommended charges.

16. Applicant proposed including June as one of the summer billing months. (TR. Vol. B-3, pp. 716 and 722). While the proposal has some merit, the price sensitive nature of the June sales must be considered. As staff has pointed out, if June is included as a summer billing month and June rates are increased by a greater percentage than other rate components, June sales could be adversely affected. (Decker, ibid). In line with our general resolution to retain current rates and tariffs where possible, June shall not be included as a summer month at this time.

17. Applicant proposed a new "Essential Service" tariff. This tariff provides service at a significantly lower percentage increase than average for those customers who use less than 500 kilowatt hours per month. As proposed, these customers would qualify for an energy charge of 5.929 cents per Kwh and customer charge of $9.58 per month. (TR. Vol. B-3, p. 735). Staff reluctantly opposed the new rate as being unworkable and ineffective. There was an instructive exchange between applicant's counsel and Paul Johnson, witness for intervenor Mary Margaret Rogers as to how the proposed tariff could be made effective and workable. (TR. Vol. B-7, p. 2438 et seq.).

18. There are many reasons why an effective and workable tariff applicable to individuals with low energy usage is important. Such a tariff will provide a signal that conservation of energy is important. A "Conservation Tariff" will provide additional incentive to residential customers to conserve.

19. Applicant is ordered to file a "Conservation Tariff" with the following modifications:

1) To qualify, residential customers must:

   (a) Consume no more than 800 Kwh in each of the summer billing months, July, August, September;

   (b) Consume no more than 500 Kwh in each of the remaining 9 billing months;

   (c) Have an annual consumption that does not exceed 6000 Kwh; and;

   (d) Make application to KG&E for the Conservation Rate.

2) The winter and first block summer rate energy charge will be the same as the current energy charge for residential winter use, which includes the Interim surcharge and the Research and Development surcharge. The summer tail block rate will be the current summer tail block rate plus the Interim surcharge and the Research and Development surcharge.

3) The customer charge will be the same as for other residential customers.

With these modifications, the "Conservation Rate" can provide an effective incentive for customers to conserve energy. For purposes of developing rates, KG&E should assume an initial take by half of those eligible. KG&E shall submit periodic reports on the acceptance levels so that appropriate adjustments may be made if more than 50% choose this option.

20. We believe this rate is a realistic first step, subject to review in the permanent case, in recognizing low usage. The evidence as to how effective any low usage tariff will be for low income customers is conflicting.

We would hope that staff, applicant and concerned groups would carefully monitor the new "Conservation Rate" in this regard. In addition, staff and applicant are strongly encouraged to review other options—lifeline rates, conservation programs, weatherization to name a few—that might be implemented to help low income customers.

21. Time of Day rates—applicant proposed and staff supported, in general, a proposal to offer time of day rates for residential, commercial and industrial customers. Staff recommended one change to applicant's proposal. (TR. Vol. B-3, p. 716). Staff recommended that the assignment of costs to time periods should be done utilizing the cost of service methodology supported by staff. These allocated time period costs could then be used to determine time period rates. (Decker, TR. Vol. B-5, p. 1472). We believe that time of day rates may provide a reasonable alternative for some customers to control their engery costs. Thus, applicant is directed to file its time of day tariffs for residential, commercial and industrial customers. These tariffs should include rates which reflect staff's cost of service methodology and all Commission adopted adjustments to rate base and operations.

22. Industrial Development Rate—applicant proposed a new Industrial Development Rider "to provide an incentive to new and expanding industry." (TR. Vol. B-3, p. 739). While conceding the reasonableness of applicant's intention and purpose, staff nevertheless opposed the Industrial Development Rate. Staff believed not enough evidence had been submitted to show the proposal to be beneficial and pointed to applicant's own Cresap report as evidence that the rider may be of little value in promoting economic development and may result in an unjustified windfall to some customers. (TR. Vol. B-5, p. 1481).

23. While appreciating staff's concern, we believe that the Industrial Development Rider is an idea worth implementing, at least on an experimental basis. Applicant is directed to file the Industrial Development rider as proposed. This tariff is approved as an experimental tariff and is subject to future review and possible elimination. It is anticipated that if this tariff is eliminated at a future date, all customers receiving service under the tariff at that time would continue to receive service under the terms and conditions of the tariff.

24. Oil Field Rate—Intervenor Kansas Independent Oil and Gas Association (KIOGA) testified as to the effect of dramatically increased rates on the Oil and Gas Industry. It is also well-known that this important and energy intensive Kansas industry is currently in economic straits with concomitant effects on the Kansas economy. Witness Frank Gaines for KIOGA testified that applicant had utilized but later abandoned, at the direction of the then Commission, a rate for Oil and Gas operations. (TR. Vol. B-7, p. 2122). Applicant is directed to develop cost of service information regarding oil and gas operations in the service area for consideration in the permanent case.

25. Voltage Level Differential—Applicant proposes to differentiate rates based upon cost differences associated with different voltage levels. For example, customers who take service at certain voltage levels may not require the transformation or additional line that customers at lower levels may require. (TR. Vol. B-3, p. 727). Staff agrees that the proposal has merit and no party opposed the concept.

26. While this may be a meritorious rate design concept, we believe the information to be limited at this point. Both staff and applicant are directed to study the matter further for possible inclusion in the permanent case.

27. "Additional Demand" Discount Winter rate—applicant proposes to institute an "additional winter demand" charge which during each winter month would compare a customer's actual peak demand to the highest monthly peak demand established in the previous summer season. All winter Kw which exceed that peak summer Kw would be charged at 10 percent of the summer peak Kw rate. This proposal appears intended to promote winter sales. As proposed the discounted price is 1/10th of the regular price. (TR. Vol. B-3, p. 725).

28. While not retreating from its original position that current rates and tariffs be generally retained, staff indicated it could support adoption of this proposal with an important change. Staff recommended that the discounted rate be 2/3 of the regular rate rather than 1/10 in order to emphasize peak demands somewhat less while providing some incentive to make additional winter sales. (TR. Vol. B-5, p. 1472).

29. We agree that the proposed rate has merit and that it should be implemented in this docket. However, we believe the company proposed discounted rate to be too low and the staff's discounted price to be a little too high. We believe a 40 percent discount to be a fair and reasonable one and applicant is directed to file tariffs in accordance therewith.

30. Space Heat Rate—applicant proposed that the residential space heat energy rate not be increased, but rather that the existing charge of 4.62 cents per Kwh for all kilowatt-hours beyond 500 sold to electric space heating customers in October through May be retained. Applicant asserts that in order to expand the load management strategy and its benefits, it is necessary to send a strong message that it costs more to provide electric service during June through September than October through May. (TR. Vol. B-3, p. 726).

31. Consistent with its general position that any revenue requirement increase that may be necessary should be spread equally to all customers staff opposed applicant's plan, staff pointed out that applicant's proposal increases residential space heat total revenues by approximately 29 percent, significantly below the average percentage increase. (TR. Vol. B-5, p. 1474). Staff's rate proposal is to increase all rates by the average increase. Staff asserts in its brief that if a rate design other than the staff primary proposal is selected, the seasonal energy block charge be increased by the same percentage that is approved for the entire class.

32. The witness for KPL/Gas Service, Steve Johnson, argued that applicant's space heat rate proposal was not cost based in that it was not based upon average embedded costs. He contended that it is discriminatory to base some rates on fully embedded costs while basing other rates on other considerations. Mr. Johnson urged the Commission to base the space heat rate on a fully embedded cost analysis of costs (TR. Vol. B-7, p. 2139).

33. We believe the staff proposal to be the better alternative. While applicant expresses concern that staff's proposal will destroy its ability to retain electric space heating sales; we believe the staff reasoning to be more persuasive. The seasonal block charge sales are probably not as sensitive to price increase as other sales made to this group. Therefore, an increase in the seasonal energy block charge would probably not reduce or restrain sales as much as an increase to other rate components. Applicant is ordered to increase the electric space heating customer's seasonal energy block charge by the same proportionate increase as other residential customers.

34. General Service (GS) Tariff Limitation—applicant proposes to limit the GS tariff to new customers with normal maximum demands of less than 100 Kw. It is rea-

soned that such customers would establish a peak demand of 100 Kw or greater no more than once in any 12-month period. Applicant argues that the limitation is necessary because:

(1) the relationship between customer size and load factor.

(2) relationship between load factor and capacity costs per Kw of billing demand. (TR. Vol. B-3, p. 730).

35. While conceding the recommendation to be reasonable, staff opposed implementation at this time because of its general posture regarding no changes in tariffs. (TR. Vol. B-5, p. 1475 et seq.). We agree that this recommendation should not be implemented at this time but might merit serious consideration in the permanent case.

36. Large General Service—to be consistent with the above recommendation and for the same reasons, applicant proposed a 1,500 Kw limitation on availability of LLP service. (TR., ibid). This recommendation is denied at this time, but should be considered in the permanent case.

37. Large General Service Demand Ratchet—applicant proposed increasing the demand ratchet from 65 percent to 75 percent since capacity costs are an increasingly predominant share of KG&E's total costs. Applicant asserts that a 75 percent ratchet provides further incentive to customers to levelize their demands. This recommendation should not be implemented at this time, but should be considered in the permanent case.

38. High Load Factor (HLF) Voltage Level Differential—applicant proposed to include a voltage grid rate design for HLF tariff that would recognize cost differences in providing service at three different voltage levels. This recommendation would replace the current method of only providing credits per Kw of billing demand. (TR.

Vol. B-3, p. 732). This recommendation will not be implemented at this time, but should be considered in the permanent case.

39. Private Lighting Service—applicant proposed to limit the availability of mercury vapor lamps to existing installations. High pressure sodium lamps will be offered instead of mercury vapor because of increased efficiency. (TR. Vol. B-3, p. 733). Staff supported this recommendation, no party opposed it and it is hereby accepted.

40. Public Street Lighting Service (STL)—applicant proposed to segregate energy and fixed cost components to communicate to customers the costs of receiving street lighting service. Applicant also proposed that associated costs be paid at one time rather than in an additional annual charge. (TR. Vol. B-3, p. 733). Consistent with their general position, staff opposed restructuring of the street lighting tariff at this time. Glen Dockery, witness for intervenor City of Wichita, opposed any change in the rate structure of the Public Street Lighting (STL) tariff. Mr. Dockery stated that:

> KG&E should not be allowed to use an application for rate increase as a device to change the manner in which it has been doing business with cities. (TR. Vol. B-6, p. 2005).

We are persuaded by staff and intervenor that to amend the Public Street Lighting tariff is inappropriate at this time. While customers cannot be shielded forever from changes in rate structures, neither should they be subjected to sudden and dramatic changes in rate.

41. Educational Institutional Service—applicant currently has four declining energy blocks in this tariff. Applicant proposed to add a customer charge and reduce the number of blocks from four to two. Applicant asserts that this proposal would streamline the rate without producing disruptive impacts on customers. (TR. Vol. B-3, p. 732). Staff opposed the recommendation and we reject the recommendation at this time.

42. Applicant proposed certain changes to the Energy Cost Adjustment Clause (ECA) tariff. Only limited testimony was provided to support the proposed changes. Because of the importance of this tariff, we feel it is necessary to obtain additional information regarding the proposed changes. Accordingly, we direct the Commission staff to schedule a hearing to review the issues raised by the proposed changes. Applicant's compliance rates should include an ECA tariff with proposed changes. This tariff will receive temporary approval and will be subject to change dependent upon the outcome of the hearing on revised ECA performance standards.

43. Farm Service Rate—Dr. Larry Langemeier testified on behalf of Alliance for Livable Electric Rates (ALERT), specifically on the effect of proposed rate increases on rural, farm families, particularly in Southeast Kansas. Dr. Langemeier testified as to the current economic plight of Kansas farmers. Dr. Langemeier testified:

> ". . . we look at these farms . . . forgetting about rate increases or anything else, we expect about 4 to 6% of the farms in the state of Kansas will go bankrupt in 1985. . ." (TR. Vol. B-5, p. 1962).

44. Dr. Langemeier's testimony merely underscores a well-known fact about current economic conditions on Kansas farms. We would be derelict if we did not give serious consideration to this factor in this proceeding. Staff and applicant are directed to develop cost of service information regarding Domestic and Agricultural use of farm customers for consideration in the permanent case. Dr. Langemeier's testimony is persuasive and we find that it is reasonable to eliminate the $.001 rate differential in the Farm Service tariff. There was no evidence presented supporting this differential and, therefore, it is ordered that the Farm Service tariff rates should be equal to the Residential Service tariff rates. Further, it is ordered the applicant should file within sixty days,

for Commission review and approval, an optional Farm Service tariff with inverted block energy rates.

H. *PHASE-IN*

1. Having determined the revenue requirements for applicant KG&E, the Commission turns to consideration of whether a phase-in of the rate increase should be ordered. We note initially that KG&E in its application in this matter requested Commission approval to "fix rates and approve tariffs to increase KG&E's gross annual retail revenues on an interim basis by $144,912,250." Consequently, the Commission could not, in any event, authorize an increase exceeding that level. For the reasons discussed below we conclude that a slightly lower first year increase is warranted and total recovery of the revenue requirement should occur over an eight year period.

2. Several parties to this proceeding sponsored phase-in plans. As noted previously, applicant itself proposed to phase-in its revenue requirements over a five year period with the return on capitalized deferred revenues to be recovered over the depreciable life of Wolf Creek. This plan, as sponsored by Mr. Hansen, was intended to mitigate the burden on customers of a substantial one-time rate increase. (TR. Vol. B-3, p. 382). It provided for a first year percentage increase of 39.4 percent before reflection of fuel savings rather than a one-time increase of around 95 percent.

3. Witnesses Salecky and Drazen for the Hospital and Industrial Intervenors also proposed a phase-in plan which would reflect the excess capacity represented by Wolf Creek and the recognition of the company's inability to realize authorized increases if they were too large. Their proposal was for a seven year phase-in with an initial increase of 20 percent maximum. (TR. Vol. B-7, p. 2096).

4. Mr. Palast, on behalf of Intervenor ALERT also suggested phase-in as an alternative. He suggested, however, that no return should be allowed on deferred revenues since it increased the impact on ratepayers of the rate increase which was the main subject of his testimony.

5. Staff witness Talbot, based on staff's recommended revenue deficiency of $181 million, presented several alternative phase-in proposals. His recommended alternative would increase rates by $122 million the first year with the remaining amount to be addressed in the subsequent four years. He suggested that a phase-in was desirable from both the ratepayer's and company's perspective to prevent customer dislocations and associated revenue generation problems. His plans did provide for return on the deferred revenues.

6. The Commission believes that a phase-in is desirable, even for the revenue deficiency level which we find appropriate today. As noted in prior portions of this order, there was substantial evidence from the public and expert witnesses that a significant increase in rates would have serious consequences on ratepayers and the economy. We agree with the witnesses who observed that this in turn would affect the applicant's ability to actually generate its authorized revenues. Such a result could, of course, lead to an even higher level of rates to generate the same authorized revenues. Such a cycle would be in no one's interests. A phase-in is also appropriate since it further reflects the fact that the economic benefits, if any, of Wolf Creek are only realized over time, as discussed previously.

7. The Commission believes that an initial increase of $135 million before reflection of fuel savings is appropriate. This is somewhat below the applicant's request, which was apparently based on its analysis of minimum financial requirements rather than impact on ratepayers. Although the Commission must also consider the financial

needs of the Company, as discussed more below, we must also balance that against the ratepayers' interests. We do not believe that the 39.4 percent increase requested by applicant can be reasonably imposed on ratepayers without serious adverse consequences on both ratepayers and the company.

8. With the initial rate increase of $135 million, $31,653,463 remains to be recovered. We believe it appropriate for such amounts to be capitalized and a return allowed on such deferrals. We believe that a four-year period for rate increases is appropriate and that recovery of the deferral costs should take place within an eight-year period. With rate increases in the second and third years of $20 million and $11,653,463, our calculations show that an increase of $2,347,906 in the fourth year which would discontinue in the ninth year should allow total recovery. The first year increase is about 36 percent before fuel savings. The accounting procedure for this phase-in plan should be as proposed by applicant, with the exception that return on the deferred revenues is to be recovered as set forth above.

9. At this point, it is appropriate to discuss what consideration should be given by the Commission to the financial condition of the company. Staff's witness Talbot, in testifying on the minimum cash flow needs of the company, gave his observations on the considerations the Commission should give to the financial needs of the applicant. He recommended that the first task was to determine the appropriate ratemaking treatment and then, if that resulted in an inability to maintain financial viability, to make adjustments.

10. Some testimony was heard throughout these proceedings, both directly by a number of public witnesses and indirectly, that bankruptcy for the financially strained utilities building Wolf Creek was a legitimate, if not desirable, policy option. In rebuttal testimony, applicant KG&E was concerned enough to submit testimony regard-

ing the potential impact and consequence of bankruptcy. Mr. James B. Liberman, a partner in the New York law firm of Bishop, Liberman & Cook, and Mr. Robert M. Miller of the same firm, testified regarding the effects of bankruptcy. Mr. Liberman testified that there has not been a bankruptcy or reorganization proceeding involving a major investor-owned electric or gas utility since depression days. Mr. Liberman is also General Counsel for General Public Utilities Corporation (GPU), the holding company for the utilities that own the Three Mile Island (TMI) generating station. Mr. Liberman testified that extensive studies were generated as a result of the company's exposure during the TMI incident. The studies concluded that the risks, probable higher costs and potential impairment of service resulting from bankruptcy proceedings were such that GPU concluded bankruptcy should be avoided. Instead, GPU launched a program of tight financial controls which is still in place. Mr. Liberman described the financial implications inherent in any financial reorganization and described the difficulties experienced by those utilities that are analagous to electric utilities, namely railroads, that have undergone reorganization proceedings under the bankruptcy laws or other insolvency proceedings. Mr. Liberman pointed out that in any reorganization the company must have access to the necessary funds to enable it to continue to operate and would usually be dependent upon major bank borrowings. However, the uncertainty connected with priorities of a company in bankruptcy proceedings would make access to operating funds very difficult if not impossible. (TR. Vol. B-8, p. 2564, et seq.)

11. Mr. Miller testified that a Chapter 11 reorganization for an investor-owned utility would in all probability not produce beneficial results. According to Mr. Miller, a utility may well have minimal opportunity to reduce expenses substantially as a result of a reorganization, and without either a reduction in expenses or an increase in revenues the business could not continue. Continued

unprofitability would raise inevitably the issue of liquidation ". . . which is a hornet's nest due to the overriding public interest in maintaining service to the community." (TR. Vol. B-8, p. 2751, et seq.) Finally, the delay and expense occasioned by a Chapter 11 proceeding would cloud the situation even further. Much expense and time consuming litigation could be expected before the novel issues were resolved. In sum, although a Chapter 11 reorganization of an investor-owned utility is neither impossible nor inconceivable, it is clearly not a risk free option and should not be embarked upon lightly. The only thing that is certain is that huge economic losses would be borne by some combination of unsecured creditors, equity holders and ratepayers, with unknown but potentially devastating effects upon the utility, the state, other utilities and the local economy. Clearly, ratepayers face serious risks upon financial failure of a utility.

12. The Commission agrees with both the staff and company's witnesses on this matter. The Commission's concern should primarily be that of appropriate ratemaking which involves a balancing of interests. In the instant case, we have concluded that the balance requires some sharing of risk and consequent economic losses between ratepayers and shareholders. Should we conclude that bankruptcy of the applicant would follow from our ratemaking decision, further consideration would be warranted. We have determined, however, that such is not the case.

13. Applicant did not present in this case its own analysis of minimum cash flow necessary for the company. Instead, in rebuttal and through cross-examination, KG&E brought into question Mr. Talbot's conclusions that financial viability of the company could be maintained under staff's rate recommendations. KG&E's rebuttal witness Abrams suggested that bankruptcy cannot be overlooked under staff's proposal, particularly in the event of

unforeseen events such as storm damage, a coal miners strike, abnormal weather or other situations requiring cash. (TR. Vol. B-8, p. 2648). Skillful cross-examination of Mr. Talbot also brought out weaknesses and errors in this analysis. The Commission concludes, however, that at most, the company showed that staff's proposal would place the company under severe financial stress but would not inevitably force it into bankruptcy.

14. We recognize that the Commission decision herein will have an even more serious impact on the company's financial health. However, we believe that appropriate measures can be taken by KG&E which will enable it to continue to provide service. In addition to minimizing its construction budget and general other expenses and rescheduling debt obligations, the Commission believes that certain specific actions are appropriate. These include elimination of its expensive television advertising campaign which appears to be primarily aimed at generating good will but seems to have the opposite effect, and reduction of its executive salaries. These items, while not substantial expenses in themselves, give an indication that company management does not recognize the seriousness of its financial condition. Elimination and reduction of these expenses would no doubt engender more goodwill than the advertising campaign itself and would indicate willingness to take necessary measures. We would emphasize, however, that reductions in these and other expenses should not affect the quality of service which the company provides. KG&E has in the past provided good service to its customers. In particular, the Commission would commend KG&E's efforts with its Project Deserve program and hopes that it will continue to promote and encourage participation in the program. Since we have made no significant adjustments to the company's requested levels for all of the system's operations and maintenance expenses, we expect good service to continue.

IT IS, THEREFORE, BY THE COMMISSION ORDERED THAT:

1. Applicant is a public utility subject to the jurisdiction of this Commission under K.S.A. 66-117, which empowers the Commission to permit and authorize changes in Applicant's rates, charges and conditions of providing retail sale of electricity;

2. Applicant's existing rates for its electric service applicable to its Kansas jurisdictional operations will not permit applicant to earn a fair and reasonable return on its investment devoted to such service;

3. Each specific finding of fact made above is hereby adopted as an ultimate finding and conclusion of law by this Commission;

4. KG&E's application is hereby granted in part and denied in part, and the Commission authorizes and orders applicant to file rates and tariffs to produce additional gross revenue in the amount of $135,000,000, as calculated in the Appendix attached to this order, in accordance with the findings of the Commission;

5. Rates resulting from authorized revisions, as herein directed, will be fair, just, reasonable and sufficient and will not be unduly discriminatory or unduly preferential so that the same may be accepted upon their filing without formal objection by staff; said authorized new rates and charges shall be effective on sales rendered on or after approval by the Commission of the revised tariffs.

6. Applicant is further ordered to comply with all the Commission's directives and orders set forth herein.

7. The Commission retains jurisdiction of the parties and the subject matter for the purpose of entering such

further order or orders as it may from time to time deem appropriate.

Dated: September 27, 1985

Lennen, Chmn.; Wright, Com.; Henley, Com.

JUDITH MCCONNELL
Executive Secretary

LCD:rh

June 4, 1985
Wichita, Kansas
9:00 A.M.

Laurence Holmes
R. S. Townsley
Donna Hinderliter
Bill Fox
Joel Heller
Lester E. Davis
Ralph Nutter
W. W. Graber
Rosie Teague
Margaret W. Bangs
Margaret J. Miller
Brian Christinat
M. J. Wall
Jenny Ablah
Kathryn Brito
Lois Tripplett
Lois Koon
Ralph Krehbiel
Charles Schrufer
Lee Good
Mark Zavala
William A. Garrison
Mel Brito
Iona Nutter
Sam Arnholz
Albert Rollman
Karen Fitzgerald Jacobs

June 4, 1985
Wichita, Kansas
1:00 P.M.

James A. Ray
Mary Margaret Rogers
Arnold Fisher
Nancy Winters
Sherman Whitley
Kirk Riley
Lyle English
Duane Sanders
Roberta Mildfelt
Anthony Tarauglla
Vern Pratt
Theo Cribbs
George Iseminger
Cynthia Perry
Pat Moore
Cecil Spurgeon
Andrea Potts
Beverly Brown
Harold Plenart
Marj Kraus
Lowell Klein

June 4, 1985
Wichita, Kansas
7:00 P.M.

Andy Allen
Evelyn Hendrickson
Richard Harper
Charles Bayouth, Sr.
Samuel Ellerman
Pat Lehman
Jeannette Ewat
Richard Harris
Teri Fresna
Alan Eshbaugh
John Livengood
Esther Francis
Willard Shopenberger
Terry Garrison
Jacque LeNai
Marla Pruett
Marlene Denny
Jerry McCarter
Eric Fowler
J. Mart Cockerill
Leroy Lehman
Greta Crosby
Darrell Glamann, Sr.
Arthur Gould
Howard Lane
Richard Cowdry
Amilia Newberry
Junior A. Weller

June 5, 1985
Wichita, Kansas
9:00 A.M.

Edmund Lorenz
Neila Nelson
Alvin McClelland
Carlene Farthing
Bob Laughlin
Ben Linn
Rick Bowden
U. A. Lawrence
Lawrence Hill
Ray Casados
John Harnburda
William Stephan
James Donnell
Dale Smith
Vernon Rice
Elvest Lehl

Lucile Cook
George Collier
C. Duane Pieplow
Lloyd Striplin
James Ard
Fred Godesky
Euel White
Jess Windsor
W. C. Helderman
Robert Crosby
Paul Miller
Charles Kerschen
Aileen Ward
Richard Walter
Jack Kice

June 5, 1985
Wichita, Kansas
1:00 P.M.

Rogert Grund
Greg Ferris
Ms. Hagins
Deborah Spence
Walter Groves
Diane Valadez
Alec Odeuseff
Myra White
James Clark
Robert Handley
Amber Mills
Mike Sawyer
Marie Groebl
Randy Hershey
Reverend D. Miller
Dick Merkel
George Gird
Joyce Hall
Robert McElroy
Atha Moore
Herman Korte
Orin Lewis
Collette Ayers

Ernie Clark
George Bayouth
Bill Burns
Mary Abbott-Mills
Nancy Moyer
Don Travis
Jerry Baker
Vee Williams
Henry Stockwell
John Mitchell
Math Loehr
Leonard Cook
Danny Mayes
Walter Berry
Tom Lawless
Daryl Gomann
Marvin Cupps
Mrs. Darel Manning
Seybrun Lahrom
Glendora Johnson
Betty Plummer
James M. Saiz
Vincent Moore

June 5, 1985
Wichita, Kansas
7:00 P.M.

Mike Tuttle
Sylvia Wilcox
Dennis Fairbanks
Powell Yew
Gladys Newman
Barbara Olmsted
Peggy Twombly
F. E. Johnson
Camilla Swart
Carl R. Wilmoth
Steve Dechant
Ron Norgren
Charles Pike
Chuck Mills
Chuck Scarbrough
Shannon Sherwood
Frank Kerns
Don Vaughn
Michael Moore
Wayne Cupps
Eric Dyer
Lucy Baker
Theresa Prockish
Roy Philips
Eric Wolfe
James Bell
Gary Knepp
Richard Aldrich
Michael Lynn
Debby Moore
Alice Lofland
Donald Snyder
George R. Barte, Jr.
Donald Krummer
Retta Christey
Cindy Chalker
Thomas Kneil
Kelly Wendeln
David Bayouth
Elizabeth Illidge
Dorothy Foster
Alice Seaman
Edna Johnson
Pam Robinson
Carl Houchin
Margaret Knepper
Carol-Lyn Gaudio
Paul Becker
Judy Cameron
Martin Cook
A. J. Hawkins
Phillip Dosien
Luther Steele
Noon Nulan
Erwin Duerksen
Jerry Lawrence

June 6, 1985
Lindsborg, Kansas
1:00 P.M.

Timothy Clanton
Eugene K. Nelson
Nadine Griffin
Sue Christensen
Paul Krumm
Weeden Nichols
Margaret Ayers
Walter Pickett
Enid Stover
Paul F. Burmeister
LeLain Lorenzen
James F. Schmidt
Gerald F. Ridenour
Irva Brandt

June 6, 1985
Newton, Kansas
7:30 P.M.

James D. Rutschman
Ron Ewart
Alvin P. Voth
Harold Schultz
Wilbur Robinson
M. R. Schroeder
Duane Carmichael
Mrs. R. C. Classen
Billy Miller
Joyce DuFriend
Keith Wiens
Paul Vaughn
Herb Reimere
Sylvia Cowley

Christina Jost
Frank Little
Ralph Garrison
Gret Bartel
Lou Jenson
Maynard Janzen
Elmer Schmidt
Stan Adamson
James Nichols
Lloyd D. Pitchford
Mary J. Lehman
Arnold E. Funk
Loren D. Reusser
Raymond Brant

June 7, 1985
Meade, Kansas
1:00 P.M.

Roy Seybert
Larry Beard
Marcia Eads
Gred Borth
Jay Kirk Cottrel
Duane Eads
Frances Gates

Dean Borth
Don Dowell
Karen Cottrell
Melvin Neufeld
Dave Geist
Gloria McKinney
Ray Charles

June 7, 1985
ElDorado, Kansas
7:00 P.M.

Jarett Molen
Dana McCoy
Mac Burnham
Joe Marcum
David Wilson
Robert M. Green
Max Corbin
Wilber C. Reed
Eldon Phares
Judy Lawrence
Fred Silver
Maryon Payne
Paul A. Boyer
George Lawson
Margie Hayes
Paul Seely, Jr.
Robert McCord

A. Martin Millard
John Cameron
W. L. Reeves
Joe Taggart
Mike Tuttle
R. A. Voisin
Ted Baker
Harlan Seeber
Gene White
Frank W. Strait
Linda Richards
Tom Harms
LeRoy Hildreth
Jean Kanausman
M. C. Canfield
Eldon Phares

June 10, 1985
Topeka, Kansas
7:00 P.M.

Carl Jarrett	Ralph Turner
Phil Kassebaum	Paul Johnson

June 11, 1985
Paola, Kansas
7:00 P.M.

Virgil Thomas	Edward L. Samyn
Glen J. Underwood	Dave Slyter
Mrs. German	Harold Hendrickson
William C. Lawrence	William Dokos
Marvin Barkis	Darold J. Hendrickson
Mr. Doudna	Mr. Kern
Father Robert Pol	

June 12, 1985
Pittsburg, Kansas
7:00 P.M.

Robert Lyerla	Rev. Conrad Ide
Albert Kozjeb	Wendell Burg
Renee Willingham	George W. Clark
John Kozuh	Elmer Smith
Jim Engler	Rick Lindsbog
Lynda Pinegar	M. J. Hefferman
Chuck Kallaus	James Armstrong, M.D.
Ralph Wright	Don Prettyman
Sam Roper	Joni Raffel
John McNeill	Julie Bartletti
Rod Dutton	Steve Bitner
Morris Stevens	James Keeyan
Augusta Rua	Cindy Pucci
Leo Merando	Jonas Ascauin
Edward Gallup	M. Lee Caldwell
Bob Rinehart	Charles Dugone
Dick Lipka	Lou Davies
Flossie Perkins	Ray Green
Lanthon Camblin	Thomas J. LeClere
Ramiro Alvarez	Mari Peterson
Adal Bartletti	Randall Palmer
G. A. Oehme	Tom Boone
Jim Loeffler, Jr.	Gladys Thornburg
Robert Moore	Jim Call
Patrick Knapp	Larry Vanderpool
Sherry Dennis	Bertha Dechairo
Dave Louiselle	Charles Sesher
Vince Scimeca	James Ascanio
John Hannah	Sandra Matfield
Winona Smith	Joe Raffel
Don Ward	Paul Gravemann
Dick Loffswold	

June 13, 1985
Overland Park, Kansas
9:00 A.M.

Robert Runnels
Sally Farenthold
John Eilert
Bonnie Lankford
Ed Lackman
Mary Stewart
Robert Buenning
Diane Teglmeir
Hugh Bellas

June 13, 1985
Overland Park, Kansas
1:00 P.M.

Ed Eilert
A. E. Martens
Ray Miller
Olin Church
Stephen Fracul
Richard Wilms
Harold Davidson
Gene Haun
Walter Gates

June 13, 1985
Overland Park, Kansas
7:00 P.M.

Robert VanCrum
Genr Amos
Neil Rimintgon
Wayne Ricketts
Wilma McAmaw
Tom Caralijo
Claire Ewert
Dr. Stacy Ollar
Steven Eberlein
Mr. Thomas
Anne Nees
Mrs. Hall
Clarence Arndt
Bill Russell
Ed Stevenson
Rev. Dale Parson
Josie Riner
Al Frisby
James Firth
Richard Kaufman
Ron Rioner
Nady Currier
Floyd Lytle
Kal Makela
William Clark
Chris Martin
Roger Thomas
Rep. Vince Snowberger
Mr. Holtzman

June 18, 1985
Iola, Kansas
7:00 P.M.

Harold Williams
Solomon Evans
Eugene Leedy
Mary Ellen Salava
Herbert Smith
John Noonan
Art Solomon
Richard Prother
James Walters
J. B. King
Russell Otto
Albert Winn

June 19, 1985
Independence, Kansas
7:00 P.M.

Frank McCabe
James Gilmore
John Barnes
Lawrence Stanley
Vernon Wint
Dr. William Hall
Robert Boyer
A. P. Wildgrube
Scott Smith
Terry Brown
James Bryan
Charles Daneke
Lucinda Sharman
Boyd King
Jean Smith
David Maugane
Iuan Fail
Helen Wildgrube
Ida Schafer
N. Cutshell
Earl Mundy
Carl Clark
Orville Austin
John Vermillion
Joe Smith
Gary Davidson
Kathy Travis
Warren Satchez
Mollie Stewart

June 20, 1985
Beloit, Kansas
7:00 P.M.

Gene Meitler
Jim Bigham
Vivian Almon
Robert L. Brown
Garland Price
Tom Hofts
Max Oharro
Jim Gouldie
Kenneth J. Maginley
Roger Nelson
Wayne Pachta Cubaks
Clyde Thomas
Raymond James (C&W)

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
5-13	1	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-14	2	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-15	3	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-16	4	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-17	5	Aikman	KGE/KCPL	W.C. Depreciation	
		LaGuardia	KGE/KCPL	W.C. Decommissioning Expense	
		Brown	KGE/KCPL	W.C. O&M	
5-20	6	Hagan	KGE/KCPL	Nuclear Fuel Expense Licensing Status	
		Roen	KGE	W.C. History/Mgmt. Prudence	
5-21	7	Roen	KGE	W.C. History/Mgmt. Prudence	
5-22	8	Roen	KGE	W.C. History/Mgmt. Prudence	
		Andrews	KGE	Industry Comparisons	

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
5-23	9	Andrews	KGE	Industry Comparisons	
		Cadman	KGE	Management Prudence	
5-24	10	Cadman	KGE	Management Prudence	
5-25	11	Cadman	KGE	Management Prudence	
		Ferraro	KGE	Economic Impact	
5-28	12	Lucas	KGE	KGE System Operation	
		Gayoso	KGE	Decommissioning Cost Recovery	
		Branca	KCPL	W.C. at Wholesale	
		Crawford	KCPL	Nuclear Fuel and Waste Disposal	
		Peck	KCPL	KCPL's W.C. Audits	
		Liberda	KCPL	Decommissioning Cost Recovery	
		Morrow	KCPL	Nuclear Insurance	
5-29	13	Doyle	KCPL	Management Prudence	
5-30	14	McPhee	KCPL	Project History Management Prudence	
		Evans	KCPL	System Operation with W.C.	
5-31	15	Evans	KCPL	System Operation with W.C.	

		Limmer	KCPL	Capacity Reserves
		Cagnetta	KCPL	Unit Accreditation
6-1	16	Sullivan	KCPL	Rate Comparisons
		Knodel	KCPL	Forecasting
		Daicoff	KCPL	Economic Impact
6-10	17	Flaherty	Staff	Project Prudence
		Mitchell	Staff	Project Prudence
6-11	18	Mitchell	Staff	Project Prudence
		Yates	Staff	W.C. O&M
		Mosher	Staff	W.C. Depreciation Rate
		Ponce deLeon	Staff	Schedule and Direct Labor Disallowance
6-12	19	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
		Mitchell	Staff	Project Prudence
6-14	20	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
6-15	21	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
		Nichols	Staff	Forecasting
6-17	22	Nichols	Staff	Forecasting
		Talbot	Staff	Decommissioning Cost and Cost Recovery

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
6-18	23	Rosen	Staff	W.C. Cancellation, Economic Benefit	
6-19	24	Rosen	Staff	W.C. Cancellation, Economic Benefit	
6-20	25	Rosen	Staff	W.C. Cancellation, Economic Benefit	
6-21	26	Eaton	E.S.C.	Forecasting	
		Sturgeon	E.S.C.	Need for Power, Prudence	
6-22	27	Phillips	KGE/KCPL	Regulatory Standards	Rosen Sturgeon
		Fitzpatrick	KGE/KCPL	W.C. Cancellation, Economic Benefit, Forecasting	Rosen Nichols Eaton
6-24	28	Limmer	KGE/KCPL	Capacity Reserve Margin	Rosen
		Fitzpatrick	KGE/KCPL	W.C. Cancellation Economic Benefit Forecasting	Rosen Nichols Eaton
6-25	29	Meyers	KGE/KCPL	Capital Additions	Rosen
		Roen	KGE	W.C. Cancellation	Rosen
		Backus	KGE.	W.C. Cancellation	Rosen
6-26	30	LaGuardia	KGE/KCPL	Decommissioning Expense	Talbot Rosen

		Brown	KGE/KCPL	Project Performance. Management, Preplanning & Industry Comparisons	Touche Ross
		Springer	KGE/KCPL	Schedule	Ponce deLeon
		Petrick	KGE/KCPL	SNUPPS/NPI	Touche Ross
6-27	31	Huston	KGE/KCPL	Schedule	Ponce deLeon Touche Ross
		Van Nort	KGE/KCPL	Daniel Personnel, Quality	Touche Ross
6-28	32	Fairchild	KGE/KCPL	Industry Comparison, Economy of Scale	Rosen
		Ferraro	KGE	Industry Comparisons of Cost and Schedule	Rosen Ponce deLeon
		Wadsworth	KGE	(excluded)	—
6-29	33	Linderman	KGE/KCPL	Direct Labor Cost	Ponce deLeon
7-1	34	Komonoff	ALERT	W.C. Cancellation, Prudence	
		Wass	KGE	Management Prudence '80 CMP Report	Touche Ross
7-2	35	Wass	KGE	Management Prudence '80 CMP Report	Touche Ross
		Fouts	KGE/KCPL	Direct Labor Costs Construction Management Prudence	Ponce deLeon Touche Ross

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
7-3	36	Fouts	KGE/KCPL	Direct Labor Costs Construction Management Prudence	Ponce deLeon Touche Ross
		Marks	KCPL	Forecasting	Nichols Eaton
		Branca	KCPL	W.C. Cancellation	Rosen
		Knodel	KCPL	Forecasting	Nichols Eaton
7-6	37	DeStefano	KCPL	Schedule	Rosen
		Rodabaugh	KCPL	Nuclear Fuel Expense	
		Beaudoin	KCPL	Rate of Return	
7-8	38	Evans	KCPL	Cancellation, System Operation with Wolf Creek	Rosen Sturgeon
7-19	39	Linderman	KG&E	Reconciliation	Ponce deLeon
7-15	B-2	Mohr	KG&E	Test year, Interim rate relief	
		Macklin	KG&E	Rate Base and Operations, JEC Spare T/G	Novin Wess
		Ruddick	KG&E	Rate Base and Operations	
7-16	B-3	Avera	KG&E	Rate of Return, Phase-In	Talbot

		Hansen	KG&E	Phase-In, FASB-71	
		Prothro	KG&E	FASB-71, Phase-In	Armstrong Wess
		Berndt	KG&E	Rate Design, Allocations	
		Lehman	KG&E	Rate Design, Allocations	
7-17	B-4	Lehman	KG&E	Rate Design, Allocations	Decker Johnson
		Bowyer (Stip.)		Rate Design	
		Herz (Stip.)	USAF	Rate Design	
		Lentell (Stip.)		Rate Design	
		Grabil		Rate Design	
		Allen (Stip.)	ALERT	Rate Design, Economic Impact	
		Yates (Stip.)	Staff	Test Year, Interim Rates	
		Drazen	Industrial Intervenors	Rate Design, Phase-In	
		Novin	Staff	JEC spare T/G	
		Wess	Staff	Income Tax Calculation Ad Valorem Tax Adjustment LaCygne 1 & 2 Operating & Maintenance Expense	
		Armstrong	Staff	FASB-71	
		Pauley	Staff (Stip)	Dispatch Modeling	
		York	Staff	Rate Design	
		Terrill	KEPCo	Allocations	

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
7-18	B-5	Decker	Staff	COS Study Based on FAD Methodology	
				Jurisdictional Allocation	
				Space Heating Rate Increase	
		Talbot	Staff	Impact on Investors	Avera
				Ratemaking Treatment, Phase-In,	
				Impact of Staff's Proposed Rates on KG&E's Financial Integrity	Abrams
		Sturgeon (Stip.)	ESC	Rate Design	
		Langemeier	ALERT	Rate Design, Economic Impact	
		Ewy	ALERT	Rate Design, Economic Impact	
	B-6	Dockery	City of Wichita	Rate Design, Economic Impact	
		Cobler	Attorney General	Rate Design, Economic Impact	
7-20	B-7	Selecky	Industrial Intervenors	Phase-In	
		Gaines	KIOGA	Rate Design, Allocations Economic Impact	

		Johnson	KPL/Gas Service	Load Management, Rate Design & Allocations		
		Palast	ALERT	Economic Effect of Proposed Rates Phase-In Minimum Cash Flow		
		Paul Johnson	Mary Margaret Rogers	Rate Design, Economic Impact		
		Boyd	Vulcan	Rate Design, Allocations, & Economic Impact		
		Seglen	KIOGA	Rate Design, Allocations, & Economic Impact		
		Weir-Energren	ALERT	Rate Design		
7-22	B-8	Clemente	KG&E	Economic Impact	Palast	
		Liberman	KG&E	Phase-In Bankruptcy		
	B-8	Abrams	KG&E	Phase-In	Talbot	
		Miller	KG&E	Bankruptcy & Reorganization		
		Andrews	KG&E	Economic Impact	Palast	
		Knobloch	Industrial Intervenors	Load Characteristics, Capacity Needs, Rate Design and Allocations		
		Oakes	KG&E	Rate Design, Allocations	Knobloch Decker	

KANSAS GAS AND ELECTRIC COMPANY
Docket No. 142,098-U
Kansas Retail Revenue Deficiency

Line No.		$000's
1	Rate Base as Adopted	994,803
2	Rate of Return on Rate Base	11.9949%
		119,326
3	Return on Load Control Equipment	20
4	Net Operating Income Required	119,346
5	Net Operating Income Adjusted	35,428
6	Net Operating Income Deficiency	83,918
7	Income Tax Factor	.50355
8	Revenue Deficiency	166,653

KANSAS GAS AND ELECTRIC COMPANY
Docket No. 142,098-U
Kansas Retail Operating Income

Line No.		$000's
1	Operating Income per Applicant	55,215
2	Staff Adjustments Accepted by Commission:	
3	No. 1 Staff Allocation Change (Rejected)	
4	No. 2 Nuclear Plant Depreciation Rate Change	1,141
5	No. 3 PMA—Depreciation and Property Tax	5,037
6	No. 4 Wolf Creek Test Energy—Depreciation	228
7	No. 5 Decommissioning Costs	547
8	No. 6 Rental Income on 345 KV Transmission Line	1,888
9	No. 7 Wolf Creek Expenses	270
10	No. 8 Jeffrey Energy Center—Depreciation (Rejected)	-0-
11	No. 9 O & M Expenses on LaCygne No. 1 and 2	4,849
12	Taxes to Reflect the Effect of Other Staff Adjustments to Operations	(33,087)
13	Total Staff Adjustments	(19,127)
14	Adjustment for Rate Case Expense	(660)
15	Operating Income as Adopted	35,428

KANSAS GAS AND ELECTRIC COMPANY
Docket No. 142,098-U
Kansas Retail Electric Rate Base

Line No.		$000's
1	Rate Base per Applicant	2,030,344
2	Staff Adjustments Accepted by Commission:	
3	No. 1 Staff Allocation Change (Rejected)	-0-
4	No. 2 Staff Allocation on General Plant	(9)
5	No. 3 Reserve for Depreciation for Depreciation Rate Change	1,141
6	No. 4 Jeffrey Energy Center Utility Plant (Rejected)	-0-
7	No. 5 Neosho Lake Lodge	(12)
8	No. 6 Wolf Creek Test Energy	(6,407)
9	No. 7 PMA—Nuclear Plant	(120,758)
10	No. 8 Cash Working Capital	122
11	Rate Base per Staff	1,904,421
12	Commission Adjustments to Rate Base:	
13	No. 9 Excess Capacity	(716,304)
14	No. 10 Economic Revaluation of Nuclear Plant	(193,314)
15	Rate Base as Adopted	994,803

APPENDIX D

Order Denying Rehearing (KG&E)

THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman;
Margalee Wright and
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGTON, KANSAS

Docket No. 142,098-U

84-KG&E-197-R

IN THE MATTER OF THE APPLICATION OF KANSAS GAS AND ELECTRIC COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

ORDER DENYING REHEARING

Now, the above-captioned matters come before the State Corporation Commission of the State of Kansas upon the Applications for Rehearing filed by Kansas Gas and Electric Company (KGE), the Hospital and Industrial Intervenors, and Vulcan Materials Company, Chemical Division (Vulcan).

The Applications for Rehearing were scheduled for oral argument along with the Applications for Rehearing of the other owners and intervenors in the Wolf Creek related dockets. Applicant, KGE, appeared by James Haines and Jonathan Heller, Wichita, Kansas. Applicant, KCPL, appeared by Warren B. Wood, Overland Park, Kansas, and Lowell L. Smithson, Spencer, Fane, Britt and Browne, Kansas City, Missouri. Applicant, KEPCo, appeared by Clifford L. Bertholf, and Phillip Kassebaum, Wichita, Kansas. Applicant, Hospital and Industrial Intervenors, appeared by Thomas M. Van Cleave, Jr., McAnany, Van Cleave & Phillips, Prairie Village, Kansas, and Robert C. Johnson and George Pond, Peper, Martin, Jensen, Maichel and Hetlage, St. Louis, Missouri. Applicant, Vulcan Materials Company, Chemical Division, appeared by Milo M. Unruh, Sr. and Milo M. Unruh, Jr., Arn, Mullins, Unruh, Kuhn & Wilson, Wichita, Kansas. Intervenor, Alliance for Liveable Electric Rates Today, ALERT, appeared by Robert V. Eye, Irigonegaray, Eye & Florez, Topeka, Kansas. Intervenor, Mary Margaret Rogers, appeared by Patrick H. Donahue and William Riggins, Kansas Legal Services, Topeka, Kansas. The Honorable Robert T. Stephan, Attorney General of the State of Kansas, appeared by Carl M. Anderson, Assistant Attorney General, Topeka, Kansas. The Commission staff and the public generally were represented by Brian J. Moline, General Counsel, Robert M. Fillmore, Deputy General Counsel, LuAnn C. Dixon, Assistant General Counsel, John Jay Rosacker, Assistant General Counsel, and Donald A. Low, Director of Utilities, Topeka, Kansas.

The Commission, being fully advised in the premises and having given due consideration to the oral arguments of the parties, finds and concludes as follows:

1. The final order was issued herein on September 27, 1985, pursuant to K.S.A. 66-117. That order was fully responsive to KGE's application for changes in its

charges for electric service, filed November 8, 1984 and amended January 31, 1985.

2. The Commission received KCPL's Application for Rehearing on October 7, 1985. KGE supplemented its application on October 9, 1985. The Commission also received on October 7, 1985, the application of the Hospital and Industrial Intervenors for rehearing. Vulcan's application for rehearing was received October 10, 1985. The applications were timely filed in accordance with K.S.A. 66-118(b).

3. By order issued October 17, 1985, the Commission required oral argument on certain issues with no time limit, and permitted oral argument on the remainder of the issues raised in the Applications for Rehearing subject to a 20 minute time limitation. In that order, the Commission also continued the Applications for Rehearing for 30 days from October 17, 1985, pursuant to K.S.A. 66-118b.

4. The Commission heard oral argument regarding the Applications for Rehearing on Friday, November 8, 1985, beginning at 8:30 a.m., in the Commission's Hearing Room B, Fourth Floor, State Office Building, as scheduled.

5. The Commission, after reviewing its September 27, 1985 order issued herein, finds that the order language at page 39, line 12, regarding PMA finding a 27 month difference in schedule duration to the point of fuel load, is incorrect. The Commission directs that the number "27" in that sentence be changed to read "29" pursuant to the evidence in Exhibit G-Staff-77, Schedule Report, pages 1, 50. Further, at page 100 regarding depreciation rates for Wolf Creek, that order reads "annual interim retirements of 12 percent." That phrase should read "annual interim retirements of 0.2 percent," to correspond to the testimony of witness Mosher, TR. Vol. XVIII, p. 5253, l. 8. These corrections are to typographical errors in the Commission's order.

6. In further reviewing the record in Docket No. 120,924-U, the Commission finds that certain procedural matters must be resolved. In particular, the Commission deferred ruling on the admissibility of Exhibit G-Staff-170, a letter from Mr. Arterburn to Messrs. Fiebach, Cadman and Koester. At this time, the Commission rules that Exhibit G-Staff-170 will not be admitted in evidence.

7. Also, on September 3, 1985, attorneys for intervenor, Mary Margaret Rogers, filed a post hearing brief accompanied by a Motion for an Enlargement of Time within which to file brief. The Commission grants this Motion and accepts the late filed brief of Mary Margaret Rogers in Docket No. 120,924-U.

8. One procedural matter is open still in Docket No. 142,098-U. On September 3, 1985, attorneys for intervenor, Mary Margaret Rogers, filed a post hearing brief in Docket No. 142,098-U accompanied by a Motion for an Enlargement of Time within which to file brief. The Commission grants that Motion and accepts the late filed brief of Mary Margaret Rogers in Docket No. 142,098-U.

9. KGE argues that accumulated depreciation is overstated for the test year period. The Commission's order provides for entries of equal amounts to depreciation expense and accumulated depreciation. Yet plant in service for purposes of depreciation expense includes even that portion of plant determined to be excess capacity, while plant in service for purposes of accumulated depreciation should not include that portion of plant determined to be excess capacity. The Commission has considered the oral arguments on this issue and finds that the accumulated depreciation calculated pursuant to the September 27, 1985 order should be modified to reflect the rate base approved by the Commission with adoption of the excess capacity adjustments. KGE will be allowed to phase-in an additional $2.927 million in its Kansas jurisdictional annual revenues during the third year of the phase-in

plan with additional deferred revenues from the first two years recoverable in the subsequent years pursuant to our September 27, 1985 order.

10. The Commission has considered the arguments of counsel for KCPL that our decisions regarding excess capacity and the valuation of Wolf Creek are preempted by the Atomic Energy Act 42 USCA § 2011 et seq. because they unlawfully intrude into the federal government's exclusive concern for the safe development of nuclear power. We find these arguments contradictory to existing case law holding that the federal government's exclusive authority under the doctrine of preemption is limited to regulation of radiation hazards at nuclear power plants. In all other areas, dual federal and state regulation of public utilities is preserved. *Northern States Power Company v. State of Minnesota*, 447 F.2d 1143 (C.A. 8th Cir. 1971). *Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Commission*, 103 S.Ct. 1713 (1983).

11. The Commission allows the owners full recovery of their proposed Wolf Creek O&M expenses with the exception of the salary of one employee who is no longer there. In addition, the Commission allows a return of the plant investment found to be excess capacity. Thus, compliance with safety regulations should not be a financial problem for the owners. In addition, there is nothing in the statutes or in constitutional law that the federal government has a constitutional interest in how a utility obtains funding to comply with federal safety requirements regarding nuclear power plants. Our order does not act as a barrier to the federal objective to develop nuclear power. The federal government is concerned with the construction of safe nuclear power plants, not with the construction of nuclear power plants at all costs.

12. The Commission has considered counsel's arguments regarding costs disallowed due to imprudence. We

have re-examined the evidence and our earlier findings and we affirm our disallowance of $37,961,400 attributable to 1,828,262 manhours and $244,561,400 due to controllable schedule delay. We find these costs are due to inefficiency or imprudence in the owners' management practices in the construction of Wolf Creek. This conclusion results from our analysis of the companion reports submitted by Touche Ross and PMA for the staff, as well as the owners' Management Performance Evaluation, Reconciliation Management Summary, and the testimony sponsored by Mr. Huston and Mr. Linderman. The staff reports analyzed the construction management practices and specific areas of cost overruns and schedule delay. We are not persuaded by the owners' reports regarding management performance and the reconciliation process, and the related testimony, that all the construction costs were incurred prudently or efficiently. We also are not persuaded by the design change analysis sponsored by witness Huston that the owners have adequately explained the reasons for schedule extensions. On the contrary, the evidence in the record, including the reports prepared on behalf of the staff by PMA and Touche Ross and the cross-examinations of Mr. Huston and Mr. Linderman, supports our previous findings of costs disallowed due to imprudent or inefficient actions on the part of the owners.

13. Our findings regarding the cost disallowance are also consistent with the legislation in K.S.A. 66-128g(b):

> The portion of the cost of a plant or facility which exceeds 200% of the "original cost estimate" thereof shall be presumed to have been incurred due to a lack of prudence. The Commission may include any or all of the portion of cost in excess of 200% of the "original cost estimate" if the Commission finds by a preponderance of the evidence that such costs were prudently incurred.

14. We find pursuant to this standard that approximately $800,000,000 of the Wolf Creek cost is in excess of 200 percent of the original cost estimate. We cannot find from the preponderance of the evidence in the record that all of the costs in excess of 200 percent of the definitive estimate were prudently incurred. We find that the owners failed to identify, quantify, explain or reconcile substantial increases in costs. Therefore, the owners have not met their burden imposed by the legislature of presenting substantial, competent evidence to the Commission that costs in excess of 200 percent of the original cost estimate were prudently incurred. As Mr. Linderman testified, it was not the purpose of the reconciliation process to analyze management prudence regarding construction of Wolf Creek. Furthermore, our examination of Mr. Huston's analysis and testimony regarding industry average comparisons does not lead us to the conclusion that all of the costs over 200 percent of the definitive estimate were prudently incurred. Comparison of management performance at Wolf Creek to a statistical average of several variables for other selected projects is a meaningless exercise absent evidence of management prudence at the projects being used as a standard. Such a comparison fails to prove that all of the construction costs at Wolf Creek were prudently incurred, or that management decisions at Wolf Creek were appropriate. On the other hand, examination of management performance at Wolf Creek reveals that inappropriate decisions and inefficient actions were present. We find no inconsistency in rejecting the owners' use of such industry statistics for determining overall performance, and adopting the use of an average unit rate to calculate a manhour factor in controllable schedule slippage. Unit rates for particular activities would be comparable throughout the industry. We affirm our earlier findings regarding the qualitative and quantitative analyses of Wolf Creek construction cost and schedule.

15. In its application for rehearing, KGE made numerous contentions concerning the Commission's adoption of risk sharing principles and the valuation of Wolf Creek at $1290/KW. Oral arguments were heard on the company's contentions that the Commission's order is unlawful, unreasonable and arbitrary in this regard. Among other points, the company argues that K.S.A. 66-128g, upon which the Commission relied, does not authorize consideration of economic and risk factors for valuation of rate base. The factors listed in that statute are argued to be intended only for use in making a prudence determination, after which plant investments should be valued at original cost. The company argues that since the Commission may only exercise authority delegated to it by the legislature, the valuation of Wolf Creek at less than original cost is beyond its authority and confiscatory.

16. The Commission has carefully considered its findings in light of Applicant's arguments and still believes its findings to be sound, reasonable and lawful. In our September 27, 1985 order we found that K.S.A. 66-128g "compels consideration of the economics of a plant in determining the reasonable value of a rate base addition." Although Applicant may be correct that that statute does not explicitly require consideration of the listed economic factors in determining valuation, we believe that the legislature did intend that those factors be considered in arriving at a fair and reasonable result. Furthermore, the inclusion of risks accepted by the utility as a factor in K.S.A. 66-128g, suggests some legislative recognition that utilities do accept risks for ratemaking purposes. Although that factor and eleven others may be primarily aimed at a prudence determination, we do not believe they are limited to that narrow purpose.

17. As staff noted in its argument, the Commission has broad authority under K.S.A. 66-101 to "do all things necessary and convenient for the exercise of . . . power,

authority and jurisdiction" to supervise and control public utilities. The powers granted to the Commission are to be liberally construed pursuant to K.S.A. 66-141 and have been so construed by the courts. *E.g., Sunflower Pipeline Co. v. Kansas Corporation Commission*, 5 K.A.2d 715, 624 P.2d 466 (1980). This liberal construction is necessary to insure that utilities provide reasonably efficient and sufficient service pursuant to K.S.A. 66-107. Staff observes that risk sharing is not, in fact, a recent regulatory innovation, but that it has been embodied in many, if not most, actions taken by Commissions in a rate case. We believe staff is correct. It is often observed that regulation is a surrogate for competition and that the goal of regulation is to attempt to produce results similar to those which would be produced in the competitive marketplace. In our September order, we noted that this analogy to the free marketplace has limitations, but certainly regulation can and does continually balance the interests of utility shareholders and ratepayers. This balancing occurs whenever a commission disallows a cost or expense, although it may actually have been incurred, because it is unreasonable to have ratepayers bear that cost or expense. Utilities, consequently, have always faced the risk that costs would be disallowed and that they would ultimately be borne by shareholders. Several specific examples illustrate that this has been recognized as a valid regulatory principle.

18. Staff noted that the court in *Kansas Gas & Electric v. State Corporation Commission*, 218 Kan. 670, 544 P.2d 1396 (1976) quoted with approval the general principle of utility law that a utility company "must bear the burden of an unreasonable extension of its plant and the risk that portions of it prudently acquired may become obsolete, or not useful." It thus appears that assumption of risk was recognized as a valid concept by that court, at least with regard to physical excess capacity. It is, of course, that court decision which prompted passage of House Bill 2927 (K.S.A. 1984 Supp.

66-128 *et seq.*), which was apparently intended to broaden further this Commission's authority.

19. There are other traditional adjustments made by commissions which have the effect of limiting the amount of costs allowed for determining revenue requirements. For example, most commissions do not generally allow plant acquired from another utility to be included in rate base at an acquisition cost higher than original cost without a showing of benefits to ratepayers. *See e.g. Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, 67; 386 P.2d 515 (1963); *In Re Plateau Natural Gas Company*, 27 PUR 3d 447 (1959). Although the primary rationale for such disallowances is to prevent inflation in the value of property which was dedicated to public service at original historical cost, the broader purpose of interest here is to insure a reasonable and efficient valuation of property in rate base. It is obviously not economically efficient to permit an increased valuation in property simply due to a change in ownership accomplished by a purchase price in excess of original cost less depreciation.

20. Staff also cited *Sekan Electric Coop Ass'n. v. Kansas Corporation Commission*, 4 K.A. 2d 477; 604 P.2d 188 (1980) in its arguments. The Court of Appeals in that case approved the use of a hypothetical capital structure quoting a treatise on utility regulation:

> It must be kept in mind, of course, that the regulatory commission does not have the actual authority to revise a utility's capital structure, per se, or to order the utility to change it into a different setup. That is a prerogative of management which cannot be superseded by the substitution of regulatory opinion-that is to say, how much debt should be incurred or common stock issued.
>
> It is solely in the area of assuming what effect a different or more desirable capital structure would

have on the cost of capital, if it were adopted, that the regulatory judgment may function. As a practical matter, of course, such a hypothetical assumption of an ideal or optimum capital structure, as distinguished from that which actually exists, may have the same dollars-and-cents results, as far as the return allowance is concerned, as an actual change in the capital structure. In other words, the regulatory authority may say to the utility company, in effect: 'We find that if the debt to equity ratio were different from what it actually is, your capital costs would be lower, so therefore we will consider the cost of capital just as if the capital structure were different, in making the return allowance.'

This distinction between the function of management and that of the regulator has been succinctly stated by the Maryland court of appeals in a recent decision [C.&P. Tel. Co. v. Public Service, 230 Md. 395, 187 A.2d 475 (1963)] wherein it was said that the owners and management of a utility have the right to determine what the debt-equity ratio should be, but they may not always make the ratepayers foot the bill resulting from the choice.
4 K.A. 2d at 480.

21. Use of a hypothetical capital structure thus appears to have been sanctioned by the Court as a means of having ratepayers pay only the costs associated with a more "desirable," "ideal" or "optimum" alternative as opposed to that "which actually exists." Our treatment of Wolf Creek, of course, is not an attempt to replicate precisely the results of an optimum situation, but merely that of a reasonable one. The Kansas court is not alone in approving the use of a hypothetical capital structure. In *Southern Bell Telephone and Telegraph Company v. Louisiana Public Service Commission*, 239 La. 175, 118 So. 2d 372, 32 PUR 3d 1 (1960), the Louisiana Supreme Court noted that the hypothetical capital structure "has

been almost universally adopted in those states where there is no formula prescribed by constitutional provisions or statutes for determination of a rate base." 32 PUR 3d at 11. After citing some eighteen jurisdictions in which courts or commissions had adopted the approach, the Court quoted from a Connecticut Commission decision that:

> In common with other operating companies of the Bell System, the Southern New England Telephone Company has consistently attempted to maintain a low debt ratio. It is manifest that the realities of the federal corporation tax structure make such a low ratio an expensive luxury, which must be borne by the ratepayers. This is so because interest on debt securities is tax deductible, but dividends on stock are not so deductible. Consequently, a lower debt ratio requires higher revenues for servicing of the stock of the company. This commission recognizes the fact that debt financing requires less revenues from ratepayers than equity financing and concludes that ratepayers should not be penalized by management's decision to maintain an unduly low debt ratio.

22. These cases certainly illustrate the fact that regulatory commissions are not bound by utility management decisions when ratepayers would be unduly penalized by the results and that the commission may substitute, for ratemaking purposes, a hypothetical with more reasonable results.

23. In its argument, staff also cited several Commission decisions which held that shareholders should bear part of the costs of plants which had been cancelled or represented excess capacity. In *Re Otter Tail Power Company*, 44 PUR 4th 219 (1981); *In Re Carolina Power and Light Company*, 49 PUR 4th 188 (1982); *Pennsylvania Public Utility Commission v. Pennsylvania Power Co.*, 27 PUR 4th 426 (1978). Those Commission orders

explicitly termed their decisions as adopting risk sharing principles, as have we. However, as discussed above, the Commission does not believe that the underlying concept is new or novel. Risk sharing is simply one way of charaterizing a means by which commissions fulfill their obligation to insure just and reasonable rates and sufficient and efficient service.

24. Although we conclude, therefore, that the Commission is legally empowered by its general statutory authority to adopt a risk sharing approach, we should also specifically address the company's contentions concerning K.S.A. 1984 Supp. 66-128g. As noted above, that statute was enacted as part of H.B. 2927, which was intended to broaden the Commission's authority to address excess capacity situations. Whether and how much that bill actually increased Commission authority may be arguable. It is clear, however, that that law gives an additional emphasis to economic efficiency in determining valuation of utility property. As previously noted, K.S.A. 1984 Supp. 66-128g, lists several economic factors for the Commission to consider. K.S.A. 1984 Supp. 66-128c also explicitly empowers the Commission, "in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, . . . to evaluate the *efficiency* or prudence of acquisition, construction or operating practices of that utility." (Emphasis added.) In accordance with that legislative direction, the Commission did consider economic efficiency of the Wolf Creek plant and the electric service it provides. We found that full rate base inclusion of the plant was not economically efficient and that the approach we took was necessary to insure reasonable rates. Consequently, we remain convinced that sharing of risks between ratepayers and shareholders by limiting return on a reasonable valuation of Wolf Creek is reasonable and within the Commission's authority.

25. It is interesting to note that Applicant has not suggested abuse of authority by the Commission in de-

termining that the risk sharing principle should apply to the physical excess capacity findings as well as the economic excess findings. We found in our September order that risks were appropriately shared by not allowing a return on both the physical and economic excess portions of Wolf Creek but allowing a return of those costs. K.S.A. 66-128c, of course, clearly allows the Commission to "exclude all or a portion" of excess capacity costs from the revenue requirements of a utility so that not only the return on those costs but also the return of those costs may be disallowed. Although such an alternative was available, the Commission believes that the approach taken is more appropriate. As reflected in the prior order, the Commission considered the concerns for fuel diversity which prompted construction of Wolf Creek in determining that return of the investment was appropriate. This, however, was premised on no return on that portion of Wolf Creek which exceeded a reasonable valuation since we believe that the risks to be shared involve both the amount and cost of capacity resulting from the generation facility.

26. The Commission's order setting the applications for rehearing for oral argument requested argument on whether the findings valuing Wolf Creek at coal plant costs were legally sufficient. The company contends that there was no support in the record to base a valuation on the cost of a coal plant. To the contrary, the method of comparing Wolf Creek costs to those of a coal plant was a basis for the owner utilities decisions to build and continue construction of Wolf Creek. For example, KGE and KCPL both performed at various times a levelized bus bar energy cost comparison for Wolf Creek and coal facilities. A series of such comparisons performed by KCE from 1976 to 1980 consisted of the levelized bus bar costs for nuclear and coal facilities for a ten year period. Although we discussed the deficiencies of the specific studies in our September order, the general

concept of comparing nuclear and coal costs to determine their relative economics is sound.

27. In calculating the valuation of Wolf Creek, the Commission took an approach very similar to the levelized bus bar analysis performed by the companies. Rather than translating the relevant costs to a figure per kilowatt hour, however, the Commission approach translated the costs into capital costs per kilowatt of capacity. Although this was not the precise methodology used by the companies, it cannot be contended that the Commission is bound to use only the exact methods contained in the testimony and exhibits. It is clear that the Commission may use its own judgment to determine a reasonable result. *See, Union Gas System, Inc. v. Kansas Corporation Commission*, 8 K.A. 2d 583, 663 P.2d 304 (1983).

28. In addition to the company studies, the record also contains the studies performed by staff witness Rosen and intervenor witness Komanoff, which were life cycle cost comparisons of nuclear and coal plants. As discussed in the September order, we chose not to rely on their specific studies due to the myriad of projections and assumptions required. It is interesting to note, however, that our approach results in a revenue requirement which falls within the range of that advocated by staff and the recommendation of witness Komanoff for inclusion in rate base of 7% of Wolf Creek. We also find it noteworthy that in this Commission's 1980 order granting a conditional certificate to KEPCo for purchase of a share of Wolf Creek, the Commission attempted to place a ceiling on the purchase price. That maximum was based on KEPCo's percentage share of the then estimated $1.5 billion Wolf Creek cost or approximately $1,300 per kilowatt. That estimate included the projected impacts of inflation on the final construction costs. That figure, we believe, compares favorably with the $1,290 figure we determined in September. Indeed, when this comparison came to our attention, we were pleased at the similarity

of the conclusions, considering the different contexts from which they arose. Any notion that the Commission is now engaged in "hindsight" regulation should be dispelled by the fact that the value we found reasonable for a prospective owner of Wolf Creek five years ago is remarkably close to the reasonable value determined in September. If it had come to the Commission's attention previously, we might well have used the $1300 per KW figure as an additional benchmark in this case. In any event, it reinforces our belief that $1290 is a reasonable figure.

29. Finally, the Commission requested argument on whether rehearing should be held to consider other methods for valuing Wolf Creek. The company opposed such a possibility. Staff argued that other methods such as avoided cost pricing or market rates could be considered which might result in even lower rates. Staff suggested, however, that this did not imply that the Commission decision was unreasonable. We agree that consideration of other approaches could result in a different result which might also be reasonable. We are, however, comfortable with our initial decision. As noted in the leading court case of *Power Comm'n v. Hope Gas Co.*, 320 U.S. 591, 602, 88 L.Ed. 333, 64 S. Ct. 281 (1944), "[I]t is the result reached and not the method employed which is controlling. . . . It is not theory but the impact of the rate order which counts." We believe the result of our decision is just and reasonable.

30. One contention made by the company is that the determination of the $1,290/KW figure was not based on evidence in the record and was not set forth with mathematical precision so that no opportunity has been afforded to test the validity of the calculations. On oral argument KCPL did argue that its review of the calculations obtained from the Commission staff suggested that the generation cost savings determination was improper since it was only based on the first year of Wolf Creek opera-

tions. KCPL suggested that greater savings would occur subsequently and should be reflected in the Commission's determination.

31. Staff argued that the precise mathematical calculations need not be set out in the order any more than calculations of the other adjustments made or adopted by the Commission. Staff also argues that it is appropriate to reflect only the current generation costs and that projecting future generation cost savings would amount to the life cycle analysis which the companies severely criticized when performed by staff witness Rosen.

32. The Commission believes that the calculations were adequately set forth in the September order but will spell out further details below. In addition, we see no significant deficiencies in the $1,150-$1,250 range of coal plant capital costs chosen from those contained in the record. As noted by staff, that range was not intended to replicate the capital costs which would have been incurred had Wolf Creek been cancelled nor what would have been the optimal capacity construction plan from the beginning. We are simply determining a reasonable value for a coal facility for purposes of setting rates for the immediate future. In this regard, the Commission is troubled that KCPL now suggests that the calculation of generation cost savings of Wolf Creek over a coal plant should include long-term projections. As noted above, our approach was adopted in part because of the companies' arguments that long-term life cycle analysis of the overall economics of Wolf Creek relative to coal facilities was too speculative. The near term approach we have taken has the benefit of not requiring the kinds of estimates KCPL now apparently suggests are desirable. We fail to see why long term estimates are appropriate for this calculation which will be subject to future adjustments and is not intended as a long-term cost analysis. Nor do we see merit in the argument that potential future adjust-

ments in the $1,290 valuation are inadequate since they cannot apply retroactively. As noted in adopting our approach, one consideration was that of intergenerational equity. If, in fact, Wolf Creek turns out to be of greater economic value to ratepayers in the future, those future ratepayers will pay more of the costs associated with that value.

33. As noted in the September order, the starting point of our calculation was determination of the generation costs for KG&E and KCPL coal plants. As obtained from Exhibit G-Staff-127, the generation costs include not only fuel expenses but also operational and maintenance expenses as reported on FERC Form 1 Reports. The same types of expenses for Wolf Creek were taken from KG&E's Application, Section B, Schedule 4 with the addition of the decommissioning costs found appropriate by the Commission elsewhere in the order. This resulted in total production related costs of $42,084,018. In order to properly match, this cost was divided by the kilowatt hour production estimate upon which the generation expenses were based. As supplied by KGE to staff in a data request, this figure was 2,664 GWH.

34. The difference in per kwh costs for the coal facilities and Wolf Creek was then multiplied by the estimated annual Wolf Creek kilowatt hours of 6,064,986,000 based on a capacity factor of 61 percent and a 1,135 megawatt capacity as suggested in KGE's brief. Since KGE now claims a capacity of 1,128 MW for Wolf Creek, the 1,135 figure is conservative. The resulting generation cost savings on an annual basis were then translated into capital costs by applying an annual fixed charge rate of 22 percent based on the cost of capital, income tax effects, depreciation, property tax and insurance rates found appropriate for the companies.

35. We have reexamined the above method for calculating the generation cost savings in light of the various deficiencies alleged by the company and still find it reason-

able, especially given the fact that future capital additions were not included in the Wolf Creek costs and that older vintage coal plants were included in determining the coal generation costs.

36. Applicant KGE argues that the Commission order phasing-in part of the revenue requirement over time is unlawful because such phase-in violates the statutory authorization found in K.S.A. 66-128(b). According to Applicant, K.S.A. 66-128(b) authorizes only the phase-in of ". . . reasonable value of property determined not currently used or required to be used." The company argues that a revenue deficiency of $166,653,463 was determined and that the Commission is obligated to allow an opportunity to earn the revenue requirement once the "used and useful" test has been passed, subject only to any voluntary phase-in. In effect, the company argues that K.S.A. 66-128, *et seq.*, is the sole authority for phase-in of revenue requirement and that the reasonable value of property that meets the "used and required to be used" test must be allowed unless the company requests phase-in. Should the company request phase-in, the argument goes, the Commission's decision is limited to whether to accept the terms and conditions of the phase-in that the company proposes.

37. Such a constrained and restrictive view of the Commission's authority to phase-in is erroneous. It should be noted at the outset that phase-in is not an exercise in determining *what* investment related costs are but *how* investment related costs are to be recovered. Contrary to Applicant's assertion, there is no negative implication in K.S.A. 66-128, *et seq.*, suggesting no authority to phase-in rates outside of the used and required to be used test.

38. Indeed, K.S.A. 66-128(b) specifically states:

> ". . . Nothing in this act shall limit the Commission's authority to set just and reasonable and *efficient* rates. . ." (emphasis added.)

39. Moreover, the organic enabling legislation in Chapter 66 envisions broad latitude for the Commission to set rates both by virtue of the "necessary and proper" clause in K.S.A. 66-101 and "just, reasonable and *efficient*" rate clause of K.S.A. 66-107. "Efficient" is an elastic regulatory term that encompasses both economic efficiency as well as technical and scientific efficiency. This point is made in a 1983 decision of the *Illinois Commerce Commission*, 56 P.U.R. 4th 361. Iowa-Illinois Gas and Electric proposed a seven-year phase-in, at full investment, of the Louisa Generating Station. The Illinois Commission approved plan deferred portions of equity return, depreciation and tax credit. The Illinois Commission noted that phase-in was a departure from traditional regulatory practice, however, there was an affirmative obligation to consider economic efficiency in setting rates:

> "By phasing-in the rate increase, the utility prices would more closely reflect the true economic costs of capacity and therefore promote a more *efficient* allocation of resources" (Emphasis supplied.)

40. See also *Southern California Edison*, 64 P.U.R. 4th 486, where California PUC held no legal prohibition preventing adoption of trended rate base.

41. In requesting phase-in of rates in its application, Applicant KGE recognized the detriment to both the utility and the customers in a sudden, abrupt rate increase. The transcript in the instant case is replete with evidence from staff, Applicant, intervenors and public witnesses as to the potentially devastating economic effect of "rate shock" on the community and on the company as well due to price elasticity of demand.

42. Second, it is manifestly clear the company suffers no financial harm as a result of the phase-in since the plan provides for recovery of the deferred amount as well as return on it. The company will, therefore, recover

its investment. However, the timing of that recovery is an appropriate regulatory consideration and the Commission has the authority and even obligation to make an independent analysis of all relevant considerations and to consider the economic efficiency of rates in reaching an overall decision.

43. K.S.A. 1984 Supp. 62-128(g)(a)(9) requires consideration of whether resulting rates of a new facility in rate base "will have an adverse impact upon the people of Kansas." It is clear from the testimony of Witnesses Palast, Boyd, Drazen, Langemeir and myriad public witnesses that a phase-in of Wolf Creek is necessary to mitigate a significantly adverse impact on ratepayers and the economy of Kansas.

44. Applicant cannot seriously argue that phase-in of rates to attempt to mitigate the potentially drastic economic consequences so tellingly testified to in this case in solely a matter of management prerogative. This Commission has an obligation to consider the economic efficiency of rates. Under the statutory standard of just and reasonable, it is the result reached, not the method employed, which is controlling. *Sekan Electric Co-op Assn. v. KCC*, 4 Kan. App.2d 481 (1980). Here, the end result is a phase-in which does not financially harm Applicant and may actually help both Applicant and customer mitigate the effect of rate shock.

45. During oral arguments the Hospital and Industrial Intervenors presented arguments concerning the elimination of the tail block demand charges for the High Load Factor (HLF) class. Counsel for KGE responded by noting that the Application of the Hospital and Industrial Intervenors for Rehearing had previously been denied by the Commission and the oral argument on the issue was improper. KGE is technically correct. The application for rehearing was denied on the procedural question of whether the tariffs submitted by KGE were in compliance with the September order. After hearing the arguments

of the intervenors, however, the Commission on its own motion reconsidered the merits of the additional demand discount winter rates which were approved. Although we still believe that the concept of giving some discount for winter demand above the previous summer peak demand in order to promote winter sales has merit, the manner in which it was implemented in this case may cause some unacceptable results. As approved this "peak additional" rate was implemented for certain rate classes by elimination of prior rate blocks or seasonal differentials. This has the potential and unintended result of increasing disproportionately the charges paid by some customers within these rate classes. In the case of intervenor Boeing, it is estimated to have an annual impact of around $400,000. To rectify this inequitable result the Commission directs KGE to submit new tariffs which reinstitute the rate blocks and seasonal differential in the affected rate classes—General Service, High Load Factor and General Service Total Electric. Such rates shall reflect the average increase per class ordered previously and shall properly reflect migration adjustments. Additionally, the Large General Service rate shall be filed such that it appropriately reflects any migration changes resulting from the above rate changes. Revised rates shall be submitted for approval within thirty (30) days. If the company and staff can agree on tariffs which incorporate the additional winter excess demand concept without producing inequitable results, such tariffs may be submitted for approval.

46. The Commission has also considered the other arguments on rate design issues raised by intervenors. We believe those arguments were fully considered originally and see no need for rehearing on those issues. Those applications should therefore be denied.

47. The Commission, having re-examined our order issued September 27, 1985, in the above captioned dockets, and having considered the oral argument of counsel, finds

no substantial error in its order, other than that denoted above. The Commission specifically reaffirms all findings of fact and conclusions of law set forth in our September 27, 1985 order referenced above, with the additions and modifications set forth herein. The Commission concludes that said order, as modified and supplemented herein, should be affirmed, and that the applications for rehearing should be denied.

IT IS, THEREFORE, BY THE COMMISSION ORDERED THAT:

The Applications for Rehearing filed by KGE, the Hospital and Industrial Intervenors, and by the Vulcan Materials Company, Chemical Division in October 1985, in the above captioned dockets, are denied.

IT IS FURTHER ORDERED THAT:

The Commission's decision issued September 27, 1985, in the above captioned dockets is affirmed, as modified and supplemented herein.

Lennen, Chmn.; Wright, Com.; Henley, Com.

Dated: November 15, 1985

/s/ Judith McConnell
JUDITH MCCONNELL
Executive Secretary

LCD:rh

APPENDIX E

Order Denying Application for Rehearing (KG&E)

THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman;
Margalee Wright
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGTON, KANSAS

Docket No. 142,098-U
84-KG&E-197-R

IN THE MATTER OF THE APPLICATION OF KANSAS GAS AND ELECTRIC COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

ORDER DENYING APPLICATION FOR REHEARING

Now, the application for rehearing filed by Kansas Gas and Electric Company (KG&E) on November 25, 1985, comes on for consideration and determination by the State Corporation Commission (Commission). Upon examining the application and upon being otherwise duly informed and advised in the premises, the Commission finds and concludes as follows:

1. The final order was issued herein on September 27, 1985, pursuant to K.S.A. 66-117. That order was fully

responsive to KG&E's application for changes in its charges for electric service, filed November 8, 1984, and amended January 31, 1985.

2. The Commission received an application for rehearing from KG&E on October 7, 1985. KG&E supplemented its application on October 9, 1985. The Commission also received on October 7, 1985, the application of the Hospital and Industrial Intervenors for rehearing. Vulcan Materials Company, Chemical Division's (Vulcan) application for rehearing was received October 10, 1985. The applications were timely filed in accordance with K.S.A. 66-118(b).

3. By order issued October 17, 1985, the Commission required oral argument on certain issues with no time limit, and permitted oral argument on the remainder of the issues raised in the applications for rehearing subject to a twenty (20) minute time limitation. In that order, the Commission also continued the applications for rehearing for thirty (30) days from October 17, 1985, pursuant to K.S.A. 66-118(b).

4. The full Commission heard oral argument regarding the applications for rehearing on Friday, November 8, 1985, beginning at 8:30 a.m., in the Commission's Hearing Room B, Fourth Floor, State Office Building, as scheduled. Thereafter on November 15, 1985, the Commission issued its Order Denying Rehearing, in which the Commission denied the application for rehearing filed by KG&E, as well as the applications for rehearing filed by the Hospital and Industrial Intervenors and Vulcan, respectively. In that order, the Commission corrected several typographical errors contained in its September 27, 1985 order, ruled on certain procedural matters that remained open, and discussed several of the Applicants' arguments in detail explaining why the arguments were not persuasive and the applications were denied.

5. On November 25, 1985, KG&E filed with the Commission its application for rehearing of the Commission's September 27, 1985 order (original order) and the Order Denying Rehearing, issued November 15, 1985 (modified order). KG&E explained in its application that it applied for rehearing of the orders because the Commission's Order Denying Rehearing also included provisions that modify and supplement the original order and thus KG&E believes there is some ambiguity about whether rehearing has been denied entirely, or whether rehearing was granted and a new order issued regarding some portions of the original order. Therefore, KG&E restated all grounds for granting a rehearing which it believes apply to the original order, modified the grounds that no longer apply to the original order, and added grounds for granting a rehearing of the modified order in its application for rehearing filed November 25, 1985.

6. The Commission has fully considered KG&E's application for rehearing, and has reviewed its orders issued September 27, 1985, and November 15, 1985, herein. The Commission finds no substantial error in its September 27, 1985 order, other than that noted in its November 15, 1985 order. The Commission finds no substantial error in its November 15, 1985 order. The Commission finds two typographical errors in its order issued November 15, 1985, herein. At page 17, paragraph 33 of the order, reference is made to Section "B" of KG&E's application for a rate increase. Section "B" shall be changed to read Sect~~ion~~ "8". Also at page 2, paragraph 2, reference is made to "KCPL's Application for Rehearing". That reference shall be changed to read "KG&E's Application for Rehearing." The Commission specifically reaffirms all findings of fact and conclusions of law set forth in the September 27, 1985 order, with the additions and modifications set forth in the November 15, 1985 order. The Commission concludes that the September 27, 1985 order, as modified and supple-

mented in the November 15, 1985 order, should be affirmed, and that the application for rehearing should be denied.

IT IS THEREFORE, BY THE COMMISSION ORDERED THAT:

The application for rehearing filed by KG&E on November 25, 1985, in the above-captioned dockets, is denied.

IT IS FURTHER ORDERED THAT:

The Commission's decision issued September 27, 1985 and modified and supplemented November 15, 1985, in the above-captioned dockets, is affirmed.

Lennen, Chmn.; Wright, Com., Henley, Com.

Dated: November 27, 1985

/s/ Judith McConnell
JUDITH MCCONNELL
Executive Secretary

SEAL

/s/ LCD
LCD:rh

APPENDIX F

Order of the Kansas Corporation Commission (KCPL)

THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman;
Margalee Wright and
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGON, KANSAS

Docket No. 142,099-U
84-KCPE-198-R

IN THE MATTER OF THE APPLICATION OF KANSAS CITY POWER & LIGHT COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

ORDER

NOW, the above captioned matters come before the State Corporation Commission of the State of Kansas for consideration and determination of the application of Kansas City Power and Light Company (KCPL, or Applicant), for approval of changes in its charges for electrical service. Chairman Michael Lennen, Commissioner Margalee Wright, and Commissioner Keith R. Henley presided at the hearing on the application.

Having considered the evidence and testimony, the files and records and being fully advised in the premises, the

Commission's findings and conclusions are set forth herein below.

I. APPEARANCES

1. The following parties entered appearances in the above captioned matters.

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For the Intervenors,
City of Overland Park; City of Lenexa; City of Mission; City of Merriam; City of Countryside; City of Roeland Park; Johnson County Board of County Commissioners; Shawnee Mission School District; Blue Valley School District; Olathe School District; Johnson County Community College; Johnson County Industrial & Commercial Energy Users Groups comprised of BayVet, Division of Miles Laboratories; Coca Cola Bottling Company of Mid America; Grinsted Products, Inc.; Hoover Universal; King Radio; J.C. Penney Catalog Center; J.A. Peterson Realty Company; (Johnson County Joint Intervenors Group)

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For the Intervenors,
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2. Four hundred seventy-seven (477) members of the public generally appeared on their own behalf and on the behalf of others at 19 public hearings conducted between June 4 and June 20, 1985. A complete list of those who testified at the public hearings is attached hereto as an Appendix.

II. INTRODUCTION

1. This order concerns two interrelated dockets, 120,-924-U and 142,099-U, both of which relate to commercial operation of the Wolf Creek Generating Station (WCGS). In order to determine whether the WCGS was fully operational and dedicated to commercial service, the Commission established in-service criteria. The owners of the WCGS, through their operating agent, KG&E, affirmed by affidavit, the in-service criteria had been satisfied and declared the WCGS to be in commercial service as of 1:16 a.m., September 3, 1985. Staff confirmed by affidavit filed September 10, 1985, that the aforementioned in-service criteria had been satisfied and that the WCGS should be considered in-service at the date and time attested to by the owner utilities.

2. Docket No. 120,924-U was created in 1979 for the purpose of initiating a "general investigation of the projected costs and related matters of the Wolf Creek Nuclear Generating Facility at Burlington, Kansas." One of the primary functions of the general investigation docket was to allow staff to begin collecting data relevant to the anticipated Wolf Creek related rate applications so that staff's investigation would not have to be completed within the 240 day suspension period prescribed by K.S.A. 66-117 for the investigation and hearing of rate applications and the issuance of a final order.

3. Docket No. 142,099-U was created on November 8, 1984, upon the filing by KCPL of its application requesting proposed changes in its charges for electric service based upon, *inter alia*, the commercial operation of Wolf Creek. KCPL amended its application on January 31, 1985. Both the original and the amended application request Commission approval of a one time increase in revenues of $90.5 million, or, in the alternative, a $110.6 million revenue increase to be phased in over a four year period.

Year	Revenue Increase
1	$45.3 million
2	$30.7 million
3	$20.0 million
4	$14.6 million

4. The fourth year increase would remain in effect for an additional fifth year to complete the phase-in plan.

5. KG&E and KEPCo also applied for approval to increase their rates for electric service due to the commercial operation of Wolf Creek. Docket No. 142,098-U was created on November 8, 1984, upon the filing by KG&E of an application requesting proposed changes in its charges for electric service based upon, *inter alia*, the commercial operation of Wolf Creek. KG&E amended its application on January 31, 1985. KG&E requested ap-

proval of rates designed to increase total company revenues by $144.9 million in 1985. The 1985 rate proposal is but the first of five annual rate increases proposed by KG&E. The annual revenue increases proposed for the following four years would be the subject of future rate proceedings.

6. Docket No. 142,100-U was created on November 14, 1984, upon the filing by KEPCo of its application requesting proposed changes in its charges for electric service based upon, *inter alia*, the commercial operation of Wolf Creek. KEPCo filed an amended application on February 1, 1985. In its application KEPCo requested a $26,984,410 increase in annual revenue, representing approximately a 40 percent increase in revenue presently collected from KEPCo's member distribution cooperatives. The Commission's findings with regard to Docket Nos. 142,098-U and 142,100-U are set out in separate orders.

7. As noted, the above-referenced applications for rate relief and the general investigation are based primarily upon the investment in, and the commercial operation of, the Wolf Creek Generating Station. Thus there are issues common to all of the above referenced dockets. In an order dated March 29, 1985, the Commission found six Wolf Creek related issues were to be designated common issues to be heard on a common record in accordance with K.A.R. 82-1-224(a). The six issues were identified as follows:

(1) the reasonableness of the cost, acquisition and construction of the Wolf Creek Generating Station, and including, but not limited to, comparison of actual cost with the definitive or original cost estimate;

(2) the reasonableness of the cost of operation of Wolf Creek including overhead, maintenance, personnel, appropriate depreciation rate and increased insurance costs;

(3) determination of the appropriate methods of waste disposal and decommissioning, and the reasonableness of the respective costs;

(4) all issues relating to the use of nuclear fuel and the status of the licensing of Wolf Creek;

(5) whether the collective management decisions to construct and the collective management decisions to continue construction on a year to year basis were economically prudent; and

(6) whether any portions of cost of acquisition, construction or operation of Wolf Creek were incurred due to lack of efficiency or prudence, including, but not limited to, consideration of those factors to be considered pursuant to K.S.A. 1984 Supp. 66-128g(a).

8. In addition, the issue of excess capacity, or the need for power, as it relates to one or more of the six issues set forth above, was found to be a common issue properly presented either on the common record or on the record of each company's specific docket. Furthermore, any other issues not specifically identified but which relate to, or bear upon, the six issues enumerated above, could be presented as part of the common record.

9. Consistent with the identification of common issues, in an order dated August 13, 1985, the Commission consolidated Docket Nos. 120,924-U, 142,099-U, 142,098-U, and 142,100-U pursuant to K.A.R. 82-2-224(a) for the purpose of hearing evidence concerning the common issues on a common record.

10. The scope of this order is limited to the Commission's findings with regard to the common issues addressed in Docket No. 120,924-U and 142,099-U jointly and the KCPL specific issues addressed in Docket No. 142,099-U. Issues identified and addressed by the Com-

mission in its deliberations concerning the common issues of Docket No. 120,924-U and 142,099-U include:

(1) the efficiency and prudence of the Wolf Creek acquisition/construction process;

(2) excess generating capacity;

(3) the reasonable value of Wolf Creek capacity;

(4) the decommissioning of a nuclear power plant;

(5) Wolf Creek operating and maintenance expense;

(6) Wolf Creek depreciation rate;

(7) the need for performance standards;

(8) funding for payment of dividends during the construction of Wolf Creek;

(9) the appropriate ratemaking treatment of fines and penalties relating to Wolf Creek;

(10) an examination of a leasing arrangement for nuclear fuel; and

(11) the need for periodic reporting concerning load growth equivalent availability, capacity factor, operating and maintenance costs, decommissioning estimates, forced and scheduled outages and insurance coverage.

11. With regard to the issues specifically related to KCPL's rate application, through direct testimony and cross-examination, Applicant took issue with the staff's recommendations regarding the interim nature of this rate proceeding; staff's proposed adjustment to operations expense and payroll tax expense regarding vacant employee positions; staff's proposal regarding exclusion of certain expenses associated with Hawthorn Units 1, 2, 3 and 4; staff's proposal regarding property tax expense as it corresponds to exclusion of the Wolf Creek Generating Station investment from rate base; staff's pro-

posal regarding calculating KCPL's income tax expense; staff's proposal regarding dispatch modeling; staff's proposed return on equity for KCPL at this time; staff's proposed jurisdictional allocations methodology for KCPL's production and transmission plant; staff's proposed rate design; staff's proposed phase-in of the rate increase; and staff's position regarding FASB-71. Certain intervenors took issue with the staff and company rate design proposals, with the level of rate relief due KCPL, and with the proposed phase-in plans of KCPL and of the staff.

12. The hearing of common issues in Docket No. 120,-924-U and 142,099-U commenced May 13, 1984, at the Kansas Statehouse, Old Supreme Court Chambers, Third Floor, Topeka, Kansas. KCPL company-specific rate issues in Docket No. 142,099-U were called for hearing on July 6, 1985 and concluded on July 15, 1985. A complete list of witnesses called to testify on behalf of the applicants and staff in Docket Nos. 120,924-U, and 142,099-U is attached hereto in the Appendix.

13. On June 21, 1985 the Johnson County Joint Intervenors filed a motion with the Commission for an order directing involuntary dismissal of the KCPL rate application, Docket No. 142,099-U. The motion was accompanied by a memorandum in support of the motion. The Commission heard oral argument on the motion by the parties on July 6, 1985 in the Old Supreme Court Chambers, Statehouse, Topeka, Kansas. On the conclusion of the oral argument, the Commission took the matter under advisement.

14. Having considered the arguments of counsel for the Johnson County Joint Intervenors, for Electro Dynamics, Inc., and Thermo Dynamics, Inc., and for KCPL, the Commission finds that the motion should be denied.

15. The Commission functions as a quasi-legislative body, and as such we find it necessary to gather as much information as available in hearings on rate applications.

Thus we believe the Johnson County Joint Intervenors' motion to dismiss should be denied because it was necessary to continue the fact-finding and information gathering.

16. The Commission also heard testimony from ratepayers at public hearings conducted at the following times and locations:

June 4	Wichita 9 a.m.— 1-7 p.m.	Century II Complex 225 W. Douglas
June 5	Wichita 9 a.m.— 1-7 p.m.	Century II Complex
June 6	Lindsborg 1 p.m.	Bethany College
June 6	Newton 7:30 p.m.	Bethel College North Newton
June 7	Meade 1 p.m.	Veterans' Bldg. 115 E. Belle
June 7	El Dorado 7 p.m.	Butler Cty. Comm. College 901 S. Haverhill Rd.
June 10	Topeka 7 p.m.	Capitol Bldg. 3rd Floor—Room 313 S
June 11	Paola 7 p.m.	Paola High School 405 N. Hospital Drive
June 12	Pittsburg 7 p.m.	Pittsburg Memorial Auditorium 503 North Pine
June 13	Overland Park 9 a.m. 1-7 p.m.	Johnson Cty. Comm. College 12345 College Blvd.
June 18	Iola 7 p.m.	Bowlus Fine Arts Center 205 East Madison

June 19	Independence 7 p.m.	Memorial Hall Civic Center (Basement) Locust & Penn. Ave.
June 20	Beloit 7 p.m.	Municipal Bldg. 119 North Hersey

The record was closed upon the filing of briefs by the parties August 30, 1985 and receipt on September 16, 1985 of staff's affidavit regarding commercial operation.

III. JURISDICTION AND NOTICE

1. The Kansas Corporation Commission has the power and authority to require all public utilities doing business in Kansas, to provide reasonably efficient and sufficient service and to establish and maintain just and reasonable rates. K.S.A. 66-107.

2. Unless the State Corporation Commission otherwise orders, no common carrier or public utility over which the Commission has control shall make effective any changed rate, or rates of such public utility or common carrier, except by filing the same with the Commission at least 30 days prior to the proposed effective date thereof. K.S.A. 66-117. The State Corporation Commission has the authority to review and evaluate the efficiency and prudence of any action, including acquisition of excess capacity, or operating practices of any public utility or common carrier for the purpose of establishing fair and reasonable rates. K.S.A. 66-128a.

3. An order of the Commission establishing just and reasonable rates must be based upon substantial competent evidence. *Jones v. Kansas Gas and Electric Company*, 222 Kan. 390 (1977).

4. KCPL is a corporation organized and existing under the laws of the State of Missouri, with its principal place of business located at 1330 Baltimore Avenue, Kansas City, Missouri, and Kansas offices in Overland Park and throughout the rest of its Kansas service territory. KCPL

is an electric public utility within the meaning of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric service at retail for domestic, commercial and industrial uses in the State of Kansas. As such it is subject to the jurisdiction of this Commission.

5. KG&E is a corporation organized and existing under the laws of the State of Kansas with its principal place of business at 201 North Market Street, Wichita, Kansas. KG&E is an electric public utility within the meaning of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric service at retail for domestic, commercial, and industrial uses in the State of Kansas. As such it is subject to the jurisdiction of this Commission.

6. KEPCo is a corporation organized and existing under the laws of the State of Kansas with its principal place of business located at 5990 Southwest 28th Street, Topeka, Kansas. KEPCo is an electric public utility pursuant to the provisions of K.S.A. 66-101 *et seq.* and it holds appropriate certificates of convenience and necessity to engage in the business of the sale of electric services at wholesale to twenty-five rural electric cooperative members in the State of Kansas. As such it is subject to the jurisdiction of this Commission.

7. The following parties were granted leave to intervene in Docket Nos. 120,924 and/or 142,099-U: Kansas Natural Resource Council, Cities of Olathe, Lenexa, Merriam, Overland Park, Shawnee, Mission, Roeland Park, Countryside, Wichita, Clearwater, Derby, Goddard, Garden Plain, Whitewater, Kechi, Potwin and Cheney, Kansas, Vulcan Materials Company-Chemical Division, ALERT, Electric Shock Coalition, Electro Dynamics, Inc., and Thermo Dynamics, Inc., Robert T. Stephan, Attorney General of the State of Kansas, Conoco, Inc., Kansas Independent Oil and Gas Association (KIOGA), Wichita

Area Chamber of Commerce, KPL/Gas Service Company, Johnson County Board of County Commissioners, Johnson County Community College, Johnson County Commercial and Industrial Energy Consumers, Blue Valley School District, Olathe Unified School District, Shawnee Mission Public Schools, Mary Margaret Rogers, United States Air Force, Kansans for Sensible Energy and the Hospital and Industrial Intervenors Group.

8. Applicant verified that it published notice of hearing in Docket Nos. 120,924-U and 142,099-U, in 19 newspapers of general circulation in its service areas in Kansas, between March 31 and April 4, 1985, and also posted a copy of the notice in a conspicuous place in its downtown office in Kansas City, Missouri and its commercial office in Kansas. In addition, Applicant verified that it served the notice by direct mail to each party of record in Docket Nos. 120,924-U and 142,099-U, and to each intervenor in its last previous rate case before this Commission, Docket No. 133,002-U. Further, Applicant verified it sent the notice, as a bill insert to each of its Kansas customers between March 12, 1985 and April 11, 1985. The Commission finds that reasonable notice of hearing was given.

IV. EFFICIENCY AND PRUDENCE OF THE WOLF CREEK ACQUISITION/CONSTRUCTION PROCESS

A. *INTRODUCTION*

1. In valuing utility property for ratemaking purposes, if the Commission determines that all or a portion of the costs of acquisition, construction, or operation of a generating facility were incurred due to a lack of efficiency or prudence or were incurred in the acquisition or construction of excess capacity, then the Commission may exclude all or a portion of such costs from eligibility for recovery through rates in accordance with K.S.A. 1984 Supp. 66-128c which provides as follows:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.
>
> For the purpose of this act, "excess capacity" means any capacity in excess of the amount used and required to be used to provide adequate and reliable service to the public within the state of Kansas as determined by the commission. The commission may in its discretion prohibit or reduce the return on costs which were incurred in constructing, maintaining or operating excess capacity.

2. In the event that the Commission finds a public utility to have imprudently incurred costs relating to the acquisition, construction, or operation of utility plant or if the Commission finds excess capacity to have resulted from imprudence in facility planning, the Commission may not allow recovery of carrying or financing charges on costs so incurred after the date of its finding. K.S.A. 1984 Supp. 66-128e provides, in pertinent part, as follows:

> In the event the commission finds that a portion of the costs were attributable either to investment in excess capacity which were incurred due to lack of prudence in facility planning or were incurred due to lack of prudence in plant acquisition, construction or operation, the commission shall exclude that por-

tion of the carrying or finance charges incurred after the date of its finding, and no part of the carrying or finance costs excluded shall ever be or become part of the reasonable value of public utility property so used and required to be used. For the purposes of this section only, a finding of lack of prudence in capacity planning for a facility which in whole or in part represents excess capacity shall not be made by the commission when a siting permit authorizing the construction of the facility has been issued under K.S.A. 66-1,162 and amendments thereto prior to the passage of this act. The commission also shall not authorize the recovery as operating expense or in any other manner of the carrying or finance costs so excluded.

Nothing in this act shall limit the commission's authority to adjust revenue requirements of any public utility if the commission determines the revenue requirement requested results in whole or in part from inefficiency or a lack of prudence.

3. The Commission must consider the prudence "factors" listed in K.S.A. 1984 Supp. 66-128g(a) in assessing whether construction costs were prudently incurred and in determining whether such costs should be recovered through rates.

The factors which shall be considered by the commission in making the determination of "prudence" or lack thereof in determining the reasonable value of electric generating property, as contemplated by this act shall include without limitation the following:

(1) A comparison of the existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that facility;

(2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;

(3) a comparison of the final cost of the facility under consideration to the final cost of other facilities constructed within a reasonable time before or after construction of the facility under consideration;

(4) a comparison of the original cost estimates made by the owners of the facility under consideration with the final cost of such facility;

(5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

(6) a comparison of any overruns in the construction cost of the facility under consideration with any cost overruns of any other electric generating facility constructed within a reasonable time before or after construction of the facility under consideration;

(7) whether the utility having an ownership interest in the facility being considered has provided a method to ensure that the cost of any decommissioning, any waste disposal or any cost of clean-up of any incident in construction or operation of such facility is to be paid by the utility;

(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

(9) whether inclusion of all or any part of the cost of construction of the facility under considera-

tion, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest of Kansas;

(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

4. In light of these statutes and the general empowering statutes in Chapter 66, we have reviewed the owners' Management Performance Evaluation, Reconciliation Management Summary, and WCGS cost reconciliation and schedule testimony. In addition, we have studied the Touche Ross and Project Management Associates (PMA) reports, and evaluated the owners' criticisms of these reports. Our assessment of the WCGS costs and construction management follows.

B. *PLANNING, ORGANIZATION AND CONTROL OF THE PROJECT AND ITS COST*

Initial Period (1973-1977)

1. The owners and staff each presented evidence and testimony to evaluate the owners' management performance during the initial phases of the Wolf Creek project. The witness for the owners, Mr. Charles L. Huston, asserted in his testimony and Exhibit G-KGE-1, that the owners' decision to join the nuclear power plant standardization group, or SNUPPS, was the "most significant event of the entire project." Because of this association, asserts Mr. Huston, the owners were able to avail themselves of the knowledge of other utilities with experience

in constructing nuclear power plants and to accrue savings in engineering, licensing and procurement, as well as other areas. (Exhibit G-KGE-1, Schedule 1, p. 10). Staff witness Thomas J. Flaherty came to the same conclusion in his testimony. He stated:

> The advantages available to the Owners from participation far outweigh the potential disadvantages whether considered on an economic or non-economic basis. The ability to spread the cost of design among a number of utilities provides immediate economic benefits that also accrue to the ratepayers. Moreover, the ability to rely on the technical expertise of other experienced and participating utilities serves to increase the knowledge base of the Owners and provides for increasing familiarity over time based on the previous situations similarly experienced by these utilities. This tie-in to a broader network was particularly important given the lack of design, construction or construction management experience of the Owners. (TR. Vol. XVII, p. 4790).

Mr. Flaherty further acknowledged the positive effects of the decision to joint SNUPPS when he discussed the savings in cost and schedule that resulted from the reduction of design hours and licensing effort by spreading the cost over a number of plants. (TR. Vol. XII, p. 4905-4906).

2. Witnesses for the staff and owners agree that the owners' selection of major contractors was appropriate. Mr. Huston discussed the selection of the major architect/engineer and the engineering management of the project in Chapter III of the "Management Performance Evaluation." (Exhibit G-KGE-1). He observed that:

> The SNUPPS utilities selected Bechtel Power Corporation based upon its having the greatest amount of nuclear project engineering experience of any firm in the industry and the strength of its proposed

> project team. Executive management committed by Bechtel to the SNUPPS project was strong. (Exhibit G-KGE-1, p. 50).

Mr. Flaherty testified that while the evaluation process for the selection of the lead architect/engineer was limited, the "selection of Bechtel resulted in obtaining the largest and most experienced architect/engineer in the nuclear power industry." (TR. Vol. XVII, p. 4792). Mr. Huston described the selection process for choosing the major site constructor, Daniel International Corporation (DIC), in Chapter VI of Exhibit G-KGE-1. Mr. Flaherty evaluated that process in his report. He concluded that:

> The evaluation and selection process used by the Wolf Creek owners was comprehensive in scope and gave appropriate consideration to economic, experience and capability factors. The evaluation and selection process employed included an assessment of the strengths and weaknesses of each organization.
>
> * * * *
>
> The selection of DIC as the constructor for the Wolf Creek project was reasonable and prudent based on the information available to the Wolf Creek Owners. The selection process was comprehensive in scope . . . and involved the scrutiny of senior management of the Owner utilities. (Exhibit G-Staff-63, p. VI-27 and 28).

Staff witness Flaherty's findings relative to the selection of the contractor for the nuclear steam supply system and the turbine generator supplier were that the selection processes were comprehensive and thorough. (Exhibit G-Staff-63, p. VI-29 and 30). He summarized his findings regarding the owners' efforts in contractor selection in his testimony:

> In each case, multiple bidders were requested to participate in the bidding process and were thoroughly evaluated on both objective and subjective bases.

> Home office or other site visits were made to further evaluate submitted material. Although the process for selection of Bechtel as the lead A/E was significantly less comprehensive, the overall process followed for selection of major vendors and contractors was appropriate and was conducted with thorough consideration of a wide variety of factors. (TR. Vol. XVII, p. 4792).

3. During the early stages of the project, the company adopted an overall management philosophy described as construction "monitoring" by both staff and owner witnesses. Staff witness Flaherty asserted that the initial philosophy could be characterized as "that of contractor monitoring and rendering approval or denial to contractor recommendations." (TR. Vol. XVII, p. 4791). Mr. Huston discussed the owners' early construction management philosophy in his exhibit:

> The initial concept [of construction management] was to have one contractor serve as the Construction Manager of all site activities with *limited* Owner involvement . . . (Emphasis added). (Exhibit G-KGE-1, Schedule 1, p. 167).

Mr. Flaherty asserted that this approach to managing the Wolf Creek Generating Station was inadequate:

> The initial management philosophy as apparently developed did not provide the necessary emphasis to the project management function. Given the size and complexity of the proposed project, a more structured and stronger approach toward management of the contractor effort would be necessary to provide the level of oversight commensurate with potential risks. This was particularly true in light of emerging trends and conditions with respect to nuclear power and the lack of relevant experience of the Owners. (Exhibit G-Staff-63, p. VI-14).

Mr. Flaherty attributed the inadequacy to the owners' lack of understanding of the nature of the project:

> . . . the Owners did not fully appreciate the complexity and magnitude of the task facing them in the design, licensing and construction of a nuclear generating facility. Relying on the same management approach which had been used in the past to support the construction of gas/oil-fired generating facilities was insufficient for directing a nuclear construction program. (TR. Vol. XVIII, p. 4797).

In Mr. Flaherty's opinion, the effect of the owners' "monitoring" role was reflected in subsequent inefficient performance by the prime construction contractor:

> . . . the initial level of management involvement was not sufficient enough to support . . . effective project management. With a greater level of involvement earlier in the project it is likely that some of the problems experienced related to DIC performance and overall project progress could have been avoid (sic) or mitigated. (TR. Vol. XVII, p. 4799).

4. The form of the contract between the constructor and the owners for the plant was addressed by the owners as well as the staff. Witnesses for the owners and staff testified that industry practice for construction of nuclear power plants had dictated the use of a cost-plus type contract by the owners. In his report, Mr. Flaherty stressed the importance of the owners' direct involvement in administering cost-plus type contracts and asserted that:

> Given the high level of financial commitment to Wolf Creek, a more extensive and experienced project construction organization should have been established at project inception. Not only would this additional monitoring capability provide an organization to better challenge claims for increased cost or schedule delays by various vendors or contractors, but it

would have provided the top management of the Owners a better understanding of project problems, etc., which would have facilitated the comprehensiveness and the timing of corrective management actions by the Owners. (Exhibit G-Staff-63, p. VII-19).

5. The Commission finds that management performance in the initial stages of the project was reasonable and appropriate in the selection of major contractors and in the decision to participate in the SNUPPS organization. However, the Commission finds that inherent problems arose from the management philosophy adopted by the owners in the early years. The evidence is persuasive that the owners neither defined nor understood the scope of the project. We find that the monitoring role was inefficient, ineffective, and inappropriate under the circumstances. The owners' initial philosophy led to management inefficiencies and ineffectiveness and contributed to poor contractor performance during certain phases of the project. The lack of effective, efficient management on the part of the owners at the outset limited the owners' ability to control costs and schedule to the detriment of the ratepayers.

Early Construction Period (1978-1980)

1. Mr. Huston testified concerning the effectiveness of the owners' management performance during construction of the Wolf Creek Generating Station. He asserts that "the owner and contractors exerted exceptionally strong and effective management and achieved commensurately outstanding results" in some areas. He also asserts that less than outstanding, but still acceptable, performance occurred in areas of labor productivity and overtime. (TR. Vol. I, p. 154). At page 189 of Exhibit G-KGE-1, Management Performance Evaluation, Mr. Huston states, "In 1979 and early 1980, it was apparent that construction performance was less than required by the schedule and the budget." He then concluded in his

testimony that the owners' overall management performance for the project was good. (TR. Vol. I, p. 163). Mr. Gary Fouts, construction manager of the project since 1979, voiced his opinion of the owners' approach to construction management prior to 1980 in his testimony. He testified that since the owners had no prior experience in nuclear construction management, it was proper and reasonable for them to select a contractor (DIC) with nuclear construction experience and entrust that contractor with the overall construction management of the project. He asserted that from the period 1976-1978 there was no need to change the approach, but that the owners increased their involvement in 1979-1980 when construction problems arose and the project entered a more complex phase. (TR. Vol. XXXV, p. 10478-10479).

2. Witnesses for the staff asserted that prior to 1980 construction performance never achieved expected levels. Mr. Flaherty criticized the owners' "monitoring" role, the size of the owners' initial project staff commitments and the level of management involvement. (TR. Vol. XVII, p. 4819). Criticisms of the early phases of construction management were also contained in the 1980 report submitted to the Commission by Cresap, McCormick and Paget, Inc. That report stated:

> Several factors lead the consultants to conclude that early phases of construction management were unsatisfactory.
>
> —Owner-utility involvement at the headquarters level was insufficient.
>
> —Staffing of KG&E's construction management organization was grossly inadequate. (Exhibit G-Staff-188, p. VII-26).

3. Witnesses for the owners assert that while problems in construction occurred at Wolf Creek as they do at all major construction projects, the owners' responses to

the problems were timely and effective. (Fouts, TR. Vol. XXXV, p. 10478; Brown, TR. Vol. XXX, p. 9024; Huston, TR. Vol. III, p. 499-500). Mr. Flaherty contends that the level of management attention was insufficient to diagnose problems soon enongh to arrest potentially harmful conditions:

> Its a question of why the problem necessarily surfaced and could it have been diagnosed sooner. (TR. Vol. XVII, p. 4946).
>
> * * * *
>
> A more relevant point would be how did the situation get to that particular point, without having been arrested earlier, and that's the kind of thing we're talking about in terms of the lack of project management capabilities in the early years may have precipitated a result of that kind, . . . (TR. Vol. XVII, p. 4957).

Mr. Flaherty pointed out that other consultants, including those employed by the owners, had concluded that the owners' management efforts should have been greater at an earlier point in time. He asserted that in view of the level of investment, the owners should have placed more emphasis on the project. (TR. Vol. XVII, p. 4875-4876).

4. Special staff witness Lawton C. Mitchell asserted that the owners' management performance was deficient in four respects: a) lack of experience on the part of constructor; b) lack of commitment by the owners and constructor; c) lack of an effective cost control and scheduling system; and d) failure of the constructor to develop an effective quality program. (TR. Vol. XVII, p. 5085-5086).

(a) Mr. Mitchell asserted that more than half of the DIC management and supervisory personnel assigned to Wolf Creek had three years or less nuclear experience when they arrived at Wolf Creek. The combination of the owners' inexperience with the inexperience of the

major constructor compounded the difficulty of attaining a degree of effectiveness on a nuclear project. (TR. Vol. XVII, p. 5085).

(b) Staff witness Flaherty asserted in his report that the owners did not adequately staff the project:

> The KG&E Construction Organization was understaffed at the time the Wolf Creek project mobilized for construction. A total personnel complement of only 6 people did not provide adequate coverage to represent the Owners' interests and level of risk associated with the project.
>
> • • • •
>
> The limited number of KG&E construction personnel made monitoring of project costs, schedule, and/or manpower impractical at the time the project fully mobilized for construction. At best, the personnel available would have the resources to deal with the progress of the project on an exception basis only; that is, the Owner personnel would be in a position to only deal with problems which were brought to their attention by vendors or contractors. (Exhibit G-Staff-63, p. VIII-18).

Staff witness Mitchell testified that the prime contractor demonstrated a lack of commitment by failing to aggressively recruit and hire nonmanual personnel during the 1979-1980 time frame. (TR. Vol. XVII, p. 5085). In his report, Mr. Mitchell stated that the ratio of nonmanual to manual labor was inordinately low throughout 1979-1980, and he suggested that this low level of nonmanual personnel support could have contributed to poor craft and quality performance during that time period. (Exhibit G-Staff-63, p. XI-15). Mr. Mitchell cited problems that occurred in issuing and implementing procedures, processing reports, interpreting inspection procedures, performing inspections, reporting progress, and planning

material and manpower levels for specific work operations. (Exhibit G-Staff-63, p. XI-19 and 20).

(c) Mr. Mitchell testified that the management cost systems used by DIC lacked sufficient data to effectively understand performance or to control costs. (TR. Vol. XVII, p. 5086). He further asserted that the deficiency resulted from a management decision rather than the lack of computer software.

> This is not a function of deficiencies in computer software but the result of a management decision to collect costs at a higher level than that which is necessary to ascertain cost causation. (TR. Vol. XVII, p. 5086).

Cresap, McCormick and Paget, Inc., in its 1980 report to the Commission, asserted that the owners' budgeting process for the project suffered from major deficiencies:

> The Wolf Creek Plant's budgeting process has five major deficiencies:
>
> —weak budget development and review procedures
>
> —inconsistent accounting for budgeted items
>
> —inadequate budget reports
>
> —insufficient performance analysis and follow-up practices
>
> —cumbersome systems that support budget development and control. (Exhibit G-Staff-188, p. IX-11 and 12).

Mr. Mitchell testified further that the scheduling system in place by DIC suffered from the lack of manpower loading. (Exhibit G-Staff-63, p. XI-22). He testified that an owners' control group was established to provide an independent review of costs and schedule delays, but, that the group was not established until 1980. (Exhibit G-

Staff-63, p. XI-29 and 30). Cresap, McCormick and Paget, Inc., in its 1980 report to the Commission, identified problems with the scheduling system and stated:

> Inability of the constructor to accurately anticipate manpower requirements has had a number of adverse consequences for project schedule and cost.
>
> * * * *
>
> Some temporary overstaffing has also occurred, and this has resulted in reduced labor productivity. (Exhibit G-Staff-188, p. VII-8).

Mr. Huston, witness for the owners, identified similar problems in his 1979 report to the owners:

> Electrical activities in the DIC CPM had not been leveled with available manpower.
>
> The six-month look-ahead schedule did not contain adequate definitions of various commodities; it did not provide management appropriate information to identify what work needed to be performed or in what sequence the work should be undertaken.
>
> In the quantity tracking system, installation of bulk items was reported as complete prior to acceptance by Quality Control. It should be recognized that significant rework occasionally resulted from these QC inspections. (Exhibit G-Staff-63, p. XI-29.)

He testified that the scheduling problem went unsolved for a period of time and that in his judgment, the logic in the schedule should have been corrected earlier. (TR. Vol. III, p. 534). In April 1980, Mr. Huston concluded in a report to the owners:

> . . . The current schedule program provides the data management needs in the civil and major equipment areas but is lacking in the piping, instrumentation, and electrical areas.

> The constructor has a CPM program with the capability to define priority schedule activities. However, problems with logic, durations, and completeness prevent it from presenting a total picture of critical project activities.
>
> * * * *
>
> The optimum size work force can work on the proper sequence of activities only when a schedule is prepared that accurately identifies this work sequence.
>
> The Owners need to improve and strengthen their schedule interface with the constructor. (Exhibit G-Staff-5, p. 11).

Mr. Huston continued to voice concerns about the scheduling program in September 1980 (Exhibit G-Staff-6) and in January 1981 when he stated:

> DIC and Startup still have not gotten together and input system restraints into the CPM schedule.
>
> * * * *
>
> Although DIC has worked on their CPM program in recent months, it still suffers from the basic flaw of not having been manpower loaded.
>
> * * * *
>
> DIC has not scheduled instrumentation work and there is still no adequate definition of the scope of work to be done.
>
> * * * *
>
> DIC has not prepared manpower curves which reflect the requirements of the new schedule. It is difficult for DIC to effectively manage their work without them. (Exhibit G-Staff-7, pp. 1 and 2).

(d) Mr. Mitchell asserted that DIC failed to develop an effective quality program which led to increased scrutiny of the project by the Nuclear Regulatory Commission (NRC) (TR. Vol. XVII, p. 5086). He further

testified that while many of the shortcomings in the program were identified early in the project, similar problems occurred throughout the life of the project. The NRC expressed concern with the owners' management controls and in 1979 threatened the project with a civil penalty if the improvement was not made. (Exhibit G-Staff-63, p. XI-31). The owners were assessed a $40,000 civil penalty early in 1983 for failure to adequately control activities affecting the quality of safety-related systems. (Exhibit G-Staff-63, p. XI-33). Cresap, McCormick and Paget in 1980 identified similar problems with the quality assurance program. (Exhibit G-Staff-188, p. VII 24 and 25).

5. The Commission finds that the owners' management of the project prior to 1981 was clearly inefficient and ineffective. The evidence is persuasive that the monitoring role adopted by the owners was inappropriate, produced ineffective management, and resulted in a lack of project control. The ensuing inefficiencies and lowering of labor productivity are reflected in schedule delays and increased costs that occurred during various periods of construction. The Commission recognizes that there was no realistic alternative to the cost-plus nature of the contract utilized by the owners for construction of the project. However, the Commission finds that the level of concern and commitment on the part of the owners in this time frame was not sufficient to administer a cost-plus type contract. In view of the nature of the contract, the cost and schedule control systems adopted by the owners were inadequate and did not provide the requisite degree of control.

6. We find that lack of management attention coupled with the lack of efficient, effective management on the part of the owners resulted in schedule delays and increased costs that could have been mitigated by strong management action earlier in the project.

Mid-years of Construction (1981-1982)

1. Mr. Huston, witness for the owners, asserted that as the project entered the more complex stages of construction (mechanical, piping, electrical, instrumentation and startup work), the owners elected to increase their construction management staff. In addition to the expansion of the on-site staff, the owners removed some portions of work and the contract administration responsibility from DIC. The owners assumed these additional roles as well as that of site construction manager which had previously been assigned to DIC. The owners began to infuse more personnel into direct participation in the construction efforts of the project. (Exhibit G-KGE-1, p. 189-190).

2. Mr. Gary Fouts, construction manager, asserted that problems were identified by the owners early in 1980, that the owners and DIC agreed to change the project management team late in 1980, and accomplished the change early in 1981. (TR. Vol. XXXV, p. 10480). Mr. Fouts stated that during 1981, DIC changed its overall organization from an area to a discipline organization to permit greater concentration and effort in the piping and other areas. (TR. Vol. XXXV, p. 10481). DIC increased personnel levels in pipe engineering and quality control and made changes in the pipe welding group. As a result, the weld rejection rate decreased significantly in 1981. In 1981, the owners removed instrumentation work from the DIC scope since it had been performed by the piping group with a number of problems. The owners began conducting weekly schedule meetings to track the systems and piping program. In 1982, the owners and DIC utilized a team of industrial engineers to improve piping performance and formed a Piping Task Force to make recommendations for needed changes. As a result, piping performance improved during the last half of 1982. (Fouts, TR. Vol. XXXV, p. 10482).

3. Mr. Fouts testified that the owners had identified problems in the electrical area in 1980 and began to implement changes. The owners and DIC agreed to change personnel and formed a joint task force to improve electrical productivity. Mr. Fouts asserted that electrical performance improved significantly in 1981 so that energization was completed on schedule. In addition, Mr. Fouts asserts, the DIC electrical group worked closely with Bechtel to minimize the schedule impact of the many design changes mandated by regulatory requirements. (TR. Vol. XXXV, p. 10484-10485).

4. In Exhibit G-KGE-1, Mr. Huston enumerated the steps the owners and DIC took to effect changes and improve performance in the period 1981-1982. He stated the owners held detailed meetings with Bechtel and Westinghouse to expedite design changes; requested that EBASCO evaluate the schedule to determine if a second shift would be of benefit; removed two piping systems from the DIC scope and assigned the work to General Electric; established a Construction Completion and Startup Testing Task Force; and established a Quality Control Group in addition to the Quality Assurance Group. (Exhibit G-KGE-1, p. 267-268).

5. Mr. Flaherty testified that the owners responded in timely fashion to problems that began to emerge in 1979. He stated the owners took a firmer stance in dealing with the prime contractors and that consultants and KG&E personnel became much more involved in planning and budgeting, particularly with respect to contractor provided plans and reports. (TR. Vol. XVII, p. 4798-4799). In Mr. Flaherty's management report on Wolf Creek, he states that the owners' construction management organization implemented in 1980 produced a much more effective means of monitoring the constructor's progress and performance. (Exhibit G-Staff-63, p. VII-19).

6. In the staff report, Mr. Mitchell observed that in October 1981, KG&E management had judged the DIC

overall management performance to be less than acceptable. The ranking assigned to DIC by KG&E management was 4, based on a scale of 1 to 10, which was considered low enough to warrant its removal from the project. (Exhibit G-Staff-63, p. XI-43). Mr. Flaherty testified that the owners took actions to initiate positive changes in DIC's performance. The actions included replacing certain DIC personnel, encouraging DIC to perform more responsibly and to more aggressively manage certain activities, and to remove certain portions of work from DIC's area of responsibility. (TR. Vol. XVII, p. 4958).

7. The Commission finds that in some instances the owners' management of the project began to improve in 1980 and that definite improvement in management performance was apparent from 1981-1982. The evidence clearly indicates that as the owners abandoned a passive role and began to aggressively manage the project, improvements in performance occurred. The increase in the level of commitment on the part of the owners through the assignment of a construction manager, the increase in the size of the owners' on-site staff, the decisions to change some Daniel personnel, and the increase in Bechtel's on-site liaison staff provided much-needed stimulus for positive change. The management inefficiency and ineffectiveness that had been apparent in earlier periods began to dissipate once the owners began to assert positive and aggressive control of the project.

Completion Stage (1983 to present)

1. Mr. Huston described the owners' actions to maintain improved performance at Wolf Creek. In response to overall construction deterioration in the first quarter of 1983, the owners required DIC to replace several members of top management at Wolf Creek. Mr. Huston asserts that the owners hired a Project Director experienced in completing nuclear projects and injected owner per-

sonnel in contractor organizations where improved performance was needed. (Exhibit G-KGE-1, p. 269). In addition, the owners placed a limit on overtime which was adversely affecting productivity; required that Westinghouse replace its project manager; and requested that Bechtel increase its site liaison staff to facilitate engineering resolutions of problems on critical activities. (Ibid., p. 269). He stated that by the end of 1983, construction had turned over to Startup most of the critical systems, except for a number of hardware and software items on these systems, and that increased management emphasis was placed on completion of those items.

2. Mr. Fouts stated the owners continued their efforts to optimize piping performance in 1983 by forming a Document Review Task Force to facilitate document review, and by infusing owner personnel into the DIC piping organization. (TR. Vol. XXXV, p. 10483).

3. Mr. Wilson Cadman, Chief Executive Officer and President of KG&E, asserted in his testimony that in November 1983:

> . . . we were coming down the wire with a plant that was well under way, minimum trouble. We looked at our ability to continue the financing of the plant and we set ourselves to the task of determining the way that we could bring the plant in with whatever restructuring of management was necessary, whatever steps had to be taken, and keeping in mind the foremost direction of the company and our policy, our stated policy, on the construction of Wolf Creek to bring that plant in safely and as nearly as reasonable as a contemporaneous plant could be built. (TR. Vol. X, p. 2797).

He testified concerning the management effort in July 1984:

> Our energies were turned to the management of the plant, continuing to adjust to the ever increasing

requirements of completion and to bring on to the site whatever levels of management with new forms of expertise that could be found anywhere in the world to do that job. (TR. Vol. X, p. 2798).

4. Mr. Mitchell, special staff witness, observed improved performance during this time frame in the resolution of nonconformance reports:

> The timing of NCR resolution was slow in the early years of the project (1977 through 1980). Improvement was noted beginning in 1981 with the most significant results being achieved in 1983 and 1984. This time period coincides with the time period in which revisions were made to DIC procedures to improve the tracking of discrepancies. (Exhibits G-Staff-63, p. XI-42).

5. Mr. Flaherty, special staff witness, testified that in the later stages of the project:

> . . . the owners appeared to have a more thorough and comprehensive understanding of the project complexity, a deeper appreciation of project requirements, and a greater commitment to more active involvement in project management. This was evidenced by a revamping of the project management organization, acquisition of more and more experienced personnel, and renewed dedication to effective project leadership and management. (TR. Vol. XVII, p. 4820).

In his report, Mr. Flaherty described the level of management participation during the completion phase of the project:

> The level of direction and participation has continued to increase to the point now where KG&E employees and/or contractors have been secunded directly into the DIC organization, with the concurrence of DIC management, in order to expedite com-

pletion of the project. Highly experienced nuclear personnel have been brought in during the last 1-2 years. (TR. Vol. XVII, p. 4799).

6. Mr. Huston stated that fuel load began at Wolf Creek on March 12, 1985. (Exhibit G-KGE-175, RGS-0103, p. 2).

7. Mr. James Haines, Counsel for Kansas Gas and Electric, announced that the Wolf Creek Generating Station went critical at 7:45, May 22, 1985. (TR. Vol. VIII, p. 2008).

8. The Commission finds the evidence persuasive that during the final stages of the project, 1983 to present, the owners sought to continue the improved management performance that had been attained in the prior period from 1981 through 1982. Through an increased level of commitment and attention to project needs, the owners achieved a higher degree of management effectiveness that had been lacking in the prior phases of the project. The Commission further finds that the increased efforts resulted in commensurately favorable progress and achievement in the completion stage of the project.

C. *QUANTITATIVE ANALYSIS—COST*

1. In the Management Performance Evaluation, the owners presented a comparative analysis of Wolf Creek utilizing a narrative, supplemented by charts, to compare certain variables regarding schedule and costs at Wolf Creek to similar variables at other nuclear power plants. The owners contend that their analysis presents the most objective evidence of the effectiveness of management performance at Wolf Creek. We find, however, that the owners' analysis is flawed by limitations in the survey methods used to obtain data, that in some instances the data were incomplete, misleading, or irrelevant, and do not support the owners' conclusions. We reject the suggestion that comparisons of statistical data provide proof

of the quality of management performance at any project. The statistics merely offer numerical comparisons of certain variables and do not provide evidence of prudent management action or guidance to direct and control the project or to mitigate potentially harmful situations.

2. Another method used by the owners to determine the prudence of the costs incurred at Wolf Creek was to analyze in detail the reasons for the manhour and cost increases. A reconciliation group consisting of employees of Bechtel, Daniel and KG&E provided this analysis for the owners by first attempting to reconcile the cost and manhour overruns between the Definitive Estimate and the 1983 Forecast. A second major reconciliation effort was undertaken to reconcile manhour and cost overruns between the Definitive Estimate and the 1985 Forecast. Due to the owners' belief that the 1983 reconciliations were not complete and contained many errors, the 1985 reconciliation effort utilized different methodologies to analyze the manhour and cost overruns. The owners contend that the 1985 reconciliation contained updated information and reconciled every manhour increase from the definitive estimate. The reasons cited and quantified in the 1983 Forecast and 1985 Forecast reconciliation packages are summarized into broad categories in the owners' Reconciliation Management Summary, an exhibit presented by the owners' witness, Charles Huston. In addition to the original 1983 and 1985 Forecast Reconciliations, the owners prepared an "updated" reconciliation to the 1983 Forecast. This reconciliation basically assigns the same reasons for the variances which were identified in the 1985 Forecast and uses 1983 actual quantities or prorates the reasons to reconcile the 1983 Forecast variance. The owners contend that based on their reconciliation efforts, all manhour and cost increases were prudently incurred. However, we note that the owners' witness Huston identified a net 1,866,000 manhours due to lower than average productivity in the

construction of WCGS. This increased total project cost by $28,359,000. (Exhibit G-KGE-1, MPE, p. 250).

3. We have examined the owners' reconciliation analyses. We find that the cost tracking system in place at Wolf Creek was not sufficiently developed and utilized to permit the identification and quantification of the causes for manhour variances in many instances. The cost tracking system contained obvious inadequacies by its failure to capture costs at a detailed level and also its failure to identify reasons for costs overruns at a broader level. For example, the reconciliation group was unable to ascertain, from the project's cost tracking system, the actual amount of payroll taxes and insurance included in the 1985 Forecast for a particular area. Also, the cost tracking system lacked the capability to determine unit rates in certain areas. The owners alleged that a cost system to precisely track every reason for every increased manhour would not have been cost beneficial. They estimated the cost for such a system at $200 million. This amount was calculated by taking 10 percent of the projected project cost minus AFUDC. (Fouts, TR. Vol. XXXV, p. 10516). We find that estimating the costs of a cost system in this manner does not produce a reliable estimate for such a cost system. We also find that the owners failed to adequately analyze other alternatives for designing and implementing a cost system which would provide reliable data to document and quantify the causes of overruns. We believe the owners acted imprudently in not developing and utilizing a cost tracking system which would enable the owners to accurately identify and quantify causes for overruns. This is an essential responsibility for the owners due to the nature of the cost plus contract negotiated with Daniel International Corporation, the constructor.

4. The owners' inadequate cost tracking system resulted in a lack of substantive historical cost data to support the reconciliation process. Therefore, the reconcilia-

tion group was often required to "fill the gaps" by using Order of Magnitude estimates to quantify the causes for manhour and cost overruns. We believe these estimates utilized methods which failed to adequately support the identification and quantification of such overruns.

5. One method used extensively throughout the reconciliation to the 1985 Forecast was the quantification of manhours by subtraction. Under this method, a large number of manhours were reconciled with no supporting documentation, and other reasons which contributed to the manhour variance were concealed at the owners' discretion. Interviews were also relied upon extensively in the 1983 and 1985 reconciliation packages, often without any other supporting documentation. Sometimes interview information was ignored by the Reconciliation Group although it may have been corroborated. Contrary to the owners assertions, we find that not all manhours were adequately reconciled in the 1985 Forecast reconciliation and updated 1983 reconciliation. This is due to the widespread use of the subtraction method and because unreconciled manhours were often reclassified by other terms such as "remaining activities." It is also our finding that some of the methods employed in the reconciliation process were too simplistic to provide meaningful estimates.

6. We also find that it was not the purpose of the Reconciliation Group to determine the prudence of manhours and cost overruns. Charles Linderman, the manager of the Reconciliation Group, testified that the group did not possess the qualifications to determine if the overruns were imprudently incurred. We conclude that the owners' reconciliations of cost and manhour overruns fail to reliably and accurately assess the causes for such increases.

7. Project Management Associates (PMA), serving as special staff, prepared an independent analysis of the manhour increases between the Definitive Estimate and

the 1983 Forecast. PMA analyzed cost overruns in the following nuclear cost categories:

(1) piping and whip restraints;

(2) mechanical systems;

(3) heating, ventilating and air conditioning systems;

(4) electrical systems and instrumentation;

(5) structural steel;

(6) special finishes;

(7) site work; and

(8) concrete.

8. PMA recommended that 4,036,723 manhours be disallowed because they were either imprudently incurred, unreconciled, or were attributable to causes which were controllable by owner management, and that the value of the WCGS plant be reduced by $82,570,600, for ratemaking purposes, to reflect such disallowance.

9. The methodology employed by PMA in quantifying unreasonable overruns consisted of three major steps. First, the definitive estimate and the 1983 forecast were analyzed in detail in order to identify quantities, unit manhour rates, and reported percentages of completion at the time the 1983 forecast was developed. Second, indicators of cost performance disclosed by the owners' "Reconciliation Packages", response to data requests, and a study of design change documents and extra work items were analyzed to identify reported or potential events which would represent causes for overruns. Third, PMA conducted a study to quantify the manhour overruns which could be attributed to causes of cost increases singled out. In most instances the development by staff of a completely independent estimate of the impact of specific cost causation was required due to inaccuracies in

the approach of the owners' reconciliation packages or due to deficiencies in Daniel's cost control system. PMA was unable to reconcile all of the manhour overruns due to deficiencies in Daniel's cost control system and the inadequacies of the owners' reconciliation packages. PMA recommended disallowance of all such unreconciled manhours.

10. The owners presented evidence in their rebuttal testimony to refute the disallowances recommended by PMA. We find that PMA utilized sound methodology and that generally PMA's manhour and cost disallowances are supportable. We have examined each PMA proposed disallowance as well as the owners' rebuttal to it. With the following exceptions, we find PMA's analysis and recommendations reasonable and proper. The following contentions of the owners have merit. Therefore, we find PMA's recommended manhour and cost disallowance should be adjusted as follows:

(A) Piping Area:

(1) PMA incorrectly used quantities to pro-rate manhours to develop their manhour reconciliation for capping and uncapping welds. The effect of this adjustment is to reduce PMA's disallowance by 349,131 direct manhours and $7,561,900 in direct and indirect costs.

(2) The owners' cleanliness program was necessary and not overzealous in the piping area as alleged by PMA. This adjustment reduces PMA's disallowance by 28,320 direct manhours or $613,400 direct and associated indirect costs.

(3) The manhours budgeted for construction completion were reasonably expended and should be allowed. This adjustment reduces PMA's disallowance by 838,000 direct manhours and

$18,151,200 in direct and associated indirect costs.

(4) In reconciling whip restraints, PMA used incorrect definitive estimate amounts and did not properly account for the manhour variance. This adjustment reduces PMA's disallowance by 94,200 direct manhours and $2,040,300 in direct and indirect costs.

(B) Structural Steel Area:

(1) PMA did not consider the effects of lighter weight steel used in the erection of structural steel which resulted in more members to install than was anticipated in the Definitive Estimate. This adjustment reduces PMA's disallowance by 153,388 direct manhours and $3,070,700 in direct and indirect costs.

(2) PMA did not consider the effects of lighter weight steel in the Miscellaneous Steel category. This adjustment reduces PMA's disallowance by an additional 38,002 direct manhours and $760,700 in direct and indirect costs.

(3) PMA used an incorrect unit rate for installation of trumplets. This adjustment reduces PMA's disallowance by 4,720 direct manhours and $94,400 in direct and indirect costs.

(C) Electrical Area:

(1) PMA used incorrect 1983 Forecast quantities by failing to include 587,345 LF of cable. This adjustment reduces PMA's disallowance by 65,500 direct manhours and $1,440,900 of direct and indirect costs.

(2) PMA overstated the definitive estimate manhours for the installation of penetrations.

This adjustment increases PMA's disallowance by 8,830 direct manhours and $194,300 of direct and indirect costs.

(3) PMA used incorrect Definitive Estimate and 1983 Forecast manhours for final system check, which is included in Miscellaneous Items. This adjustment reduces PMA's disallowance by 8,920 direct manhours and $196,237 of direct and indirect costs.

(D) Building Finishes Area:

(1) PMA used incorrect Definitive Estimate and 1983 Forecast manhours to reconcile doors. Also, PMA did not consider the effect of repairs and replacement of doors, the additional safety and security requirements, and design changes which resulted in additional handling and manhours to install. This adjustment reduces PMA's disallowance by 27,798 direct manhours and $525,800 in direct and indirect costs.

(2) PMA did not consider that additional penetrations were necessary to accommodate design changes for additional security monitoring equipment in the roofing area. This adjustment reduces PMA's disallowance by 538 direct manhours and $10,200 in direct and indirect costs.

(E) Concrete Area:

(1) PMA used insufficient complexity factors to reconcile manhours required for construction openings and out-of-sequence openings. This adjustment reduces PMA's disallowance by 58,038 direct manhours and $956,110 in direct and indirect costs.

(2) The productivity rate used by PMA to estimate the effects of cold weather was insufficient. This adjustment reduces PMA's disallowance by 68,128 direct manhours and $1,122,390 in direct and indirect costs.

(3) PMA incorrectly assumed that manhours for reinforcing steel fabrication shop were included in work authorizations. Additionally, PMA allocated insufficient manhours to the on-site fabrication shop. This adjustment reduces PMA's disallowance by 402,908 direct manhours and $6,595,290 in direct and indirect costs.

(F) HVAC Area:

(1) PMA incorrectly transferred 8,910 manhours which should have remained in the HVAC area. This adjustment increases PMA's disallowance by 8,910 direct manhours and $186,000 in direct and indirect costs.

(2) PMA should have allowed additional manhours for design changes in reconciling ducts and supports. This adjustment reduces PMA's disallowance by 32,000 direct manhours and $668,000 direct and indirect costs.

(3) PMA incorrectly disallowed manhours for converting Non-Q duct to II/I based on Corrective Action Report 13, due to the fact that CAR-13 applies only to the piping area. This adjustment reduces PMA's disallowance by 10,500 direct manhours and $219,300 direct and indirect costs.

(4) PMA used an incorrect normative rate for duct and supports. This adjustment reduces PMA's disallowance by 24,210 direct manhours and $505,500 direct and indirect costs.

(5) PMA disallowed certain manhours associated with changes to equipment and accessories. These unreconciled members are found to have been justifiably expended. This adjustment reduces PMA's disallowance by 21,900 direct manhours and $457,200 direct and indirect costs.

11. The total net effect of the adjustments in the above areas is to reduce PMA's disallowance by 2,208,461 direct manhours and $44,609,200 direct and indirect costs. We find that out of the total PMA recommended disallowance of construction costs of 4,036,723 direct manhours and $82,570,600 direct and indirect costs, a total of 1,828,262 direct manhours were imprudently incurred, either because those manhours resulted from imprudent management actions, were controllable by management, or were not reconcilable due to deficiencies in the owners' cost tracking systems. This finding is confirmed by the testimony of Mr. Huston that a net 1,866,000 manhours at the WCGS were incurred due to lower than average productivity. Therefore, we find that the related direct and indirect costs of $17,841,858 should be excluded from both a return on and recovery of KG&E's share of its investment in Wolf Creek. We find that $17,841,858 should be excluded from both a return on and recovery of KCPL's share of its investment in Wolf Creek. We find that $2,277,684 should be excluded from both a return on and recovery of KEPCo's share of its Wolf Creek investment.

12. We find that DIC received fees which were based on the total scope of work as defined in its contract. Portions of the work scope such as instrumentation installation were subsequently removed from DIC's control. Based upon this finding, we conclude that an additional $450,000 was imprudently incurred as fees paid to DIC for work which they did not perform or administrate, but which was performed by other contractors. (Huston, TR. Vol. IV, p. 1005). For this reason we find that

$211,500 should be excluded from both a return on and recovery of KG&E's share of its investment in Wolf Creek, $211,500 should be excluded from both a return on and recovery of KCPL's share of its investment in Wolf Creek, and $27,000 should be excluded from both a return on and recovery of KEPCo's share of its investment in Wolf Creek.

D. *QUANTITATIVE ANALYSIS—SCHEDULING*

1. We find that the owners of Wolf Creek have not presented any detailed reconciliation or analysis of the schedule slippage that occurred at the Wolf Creek construction project.

2. The owners did compare the overall schedule at Wolf Creek to other nuclear power plant construction schedules. They conclude that Wolf Creek's shorter construction schedule is evidence of management prudence. We do not believe such a comparison can be so conclusive. Comparing one plant to other plants in the industry does not adjust for inconsistencies among the plants. Wolf Creek may have had a shorter schedule than other plants, but we find, based on PMA's analysis, that it had a longer schedule than it should have had because the owners failed to avoid or mitigate controllable delay. In addition, we find the owners' comparative analysis contained basic flaws in the manner in which it was conducted, as pointed out in staff's brief, pages 223-241.

3. We have examined the scheduled analysis that was performed independently by PMA using information gathered through data requests and interviews. PMA reviewed the Wolf Creek construction schedule from the start of construction in February 1977 through February 1984, when fuel load was scheduled to begin in October 1984. In February 1977, fuel load was expected to begin in May 1982. By comparing the original schedule to the February 1984 schedule, PMA found a 27

month difference in schedule duration to the point of fuel load. PMA's analysis of the change in the schedule duration is based on the critical path method. A critical path is the longest, time-wise, chain of logically interrelated activities in a schedule network. PMA's research included consideration of numerous activities and critical paths, but PMA selected only the three most critical paths for detailed anlysis because PMA determined that these contained the activities that were in a logical sequence from receipt of the limited work authorization (LWA) to the date of fuel load as projected in the February 1984 construction schedule.

4. The three most critical paths start with the reactor building civil/structural work and flow through three separate reactor building mechanical system activities and are followed by preoperational testing and fuel load. The three major reactor building mechanical systems that were examined in detail include the reactor coolant system, the chemical and volume control system and the component cooling system. PMA determined what part of the schedule slippage on each sequence was uncontrollable, controllable, unreconciled, and mitigated (gain in schedule). PMA considered all increases in scope (quantity) to be the result of uncontrollable slippage, and thus recommended that this slippage be allowed. Uncontrollable slippage was based on the added quantities times the definitive estimate unit rate. The owners criticized PMA's use of the Definitive Estimate (D.E.) unit rate as not adequately allowing for uncontrollable slippage due to increased complexity. We have examined PMA's computations and find that in multiplying the Definitive Estimate unit rate times the 1980 and 1985 quantities, PMA reasonably accounted for quantity and complexity increases among the heterogeneous commodities. We find that PMA properly accounted for uncontrollable slippage in this manner. Controllable and unreconciled slippage is disallowed in PMA's analysis, but only after it is off-

set by schedule mitigations or gains. In other words, all months of mitigation or gain are applied against controllable and unreconciled slippage to reduce the amount of disallowed schedule slippage. Controllable slippage was calculated using an average unit rate taken from the owner's Management Performance Evaluation (MPE). (Exhibit G-KG&E-1). The average unit rate was applied to the change in quantities between 1980 (when quantities were first accumulated by area) and 1985 (the latest available forecasted quantities). This yielded the manhours attributable to productivity change. We find that PMA's use of the industry average unit rates in the MPE is reasonable.

5. Of the three critical path sequences analyzed, PMA selected the one with the greatest uncontrollable slippage, because even if the project had experienced no controllable delay, there still would have been a 14.5 month delay for reasons beyond the owner's control. Using this analysis, PMA determined that in the sequence with the greatest uncontrollable delay, 14.5 months were uncontrollable, 37 months controllable, 1 month unreconciled, and 23.5 months were mitigated. PMA applied the 23.5 month gain as an offset to the 38 month controllable and unreconciled schedule delay to yield a net 14.5 month controllable delay. After examining this analysis in detail, we find it to have merit.

6. PMA identified numerous deficiencies and shortcomings with the DIC scheduling system. (Exhibit G-Staff-77, Schedule Report). This necessitated PMA's independent analysis. The owners have criticized PMA's methods as being mechanical, and as failing to include an analysis of all the critical paths. We find no merit to these criticisms. PMA's analysis extended through February 1984. At that point, the Construction Intermediate Schedule (CIS) projected a fuel load date of October 1984. PMA chose this cutoff because this was the time that DIC discontinued updating and incorporating

progress into its computerized construction schedule network. (Exhibit-Staff-77, Schedule Report p. 3).

7. The owners' witness, Mr. Huston, has offered an exhibit containing a list of numerous design change packages (DCPs) with construction completion dates beyond the October 1984 fuel load date. Mr. Huston concludes that regulatory change prevented the owners from loading fuel in October of 1984. The Commission does not find such a conclusion is warranted from that exhibit. (Exhibit-G-KG&E-175). We believe that if activities were critical to the October 1984 fuel load, the owners' February 1984 CIS schedule would have reflected them. There is no analysis given by Mr. Huston whether the activities listed on his exhibit are necessary for fuel load and, if they were necessary, whether they could not have been completed by the October 1984 fuel load date. The exhibit only indicates that in March 1985, some of the activities had not been completed to meet the October 1984 fuel load date, although in some cases the engineering was completed much earlier. There is no substantial evidence that PMA failed to consider all activities that affected the critical path. Indeed, we find that PMA did consider those activities on the critical path. (Exhibit G-Staff-77, p. 3; TR. Vol. XX, p. 5703; p. 5784-5785).

8. We therefore find that 14.5 months of the schedule slippage were within the control of the owners, and that the costs associated with such delay should be excluded as imprudent.

9. The issue of how to quantify the costs associated with the controllable schedule delay must be addressed next. PMA's analysis used the AFUDC and indirect/overhead costs associated with the last 14.5 months of the project given the October 1984 fuel load date. PMA consulted the owners' Wolf Creek "projected construction expenditures" to obtain the AFUDC amounts for the

last 14.5 months preceding the October 1984 fuel load date. (Exhibit-Staff-77, Schedule Report, p. 51). The total, $285,878,400, was distributed among the owners using the owners' recorded allocation. To this amount of AFUDC, PMA added a similarly computed amount, $78,372,400, for indirect/overhead costs attributable to the 14.5 months controllable slippage. PMA reasoned that these amounts appropriately measured the cost of controllable delay because these costs were time related, that is, these costs continued to accumulate as the schedule was extended.

10. We find that PMA reasonably quantified the indirect/overhead costs attributable to the controllable delay because these costs accumulating at the end of the project would not have been incurred if the controllable slippage had been eliminated. We direct that the indirect/overhead cost be apportioned among the owners according to their percentage shares of WCGS: KG&E: $36,835,028; KCPL: $36,835,028; KEPCo: $4,702,344.

11. Applicants contend that even if there were avoidable delays in construction of Wolf Creek, exclusion of AFUDC is not a proper remedy. Witness Fairchild contended that ratepayers are not harmed by delays in construction unless their time value of money is less than the AFUDC accrual rate of the utilities. Fairchild suggested that implicit in the statutory policy to exclude CWIP from inclusion in rate base is a determination to the contrary; i.e., ratepayers have a greater time value of money than the AFUDC accrual rate. (TR. Vol. XXXII, p. 9637).

12. Witness DeStefano for KCPL argued that any disallowance for schedule slippage should be offset by the benefit to ratepayers in not paying increased rates earlier. His analysis showed that at a ratepayer discount rate of 10.14 percent, ratepayers would be indifferent to "either currently rate basing the full capital cost of $1,367.2 million requested in this case or rate basing a

capital cost of $1,187.5 million 14.5 months earlier." (TR. Vol. XXXVII, p. 11035).

13. Mr. Fairchild also disputes the use of AFUDC accumulated at the end of the project to quantify the costs of delays that occurred earlier in the project. He analyzed the controllable schedule delays calculated by PMA and testified that part of the controllable delay occurred from December 1978 through July 1979, part in 1980, and part between 1980 and 1984. Mr. Fairchild recalculated the AFUDC that would have been incurred had there been no delay, and determined the difference between actual versus no delay using the midpoint of each period to quantify the AFUDC. This method determined that $166,189,000 is the proper amount of AFUDC to be attributed to the 14.5 month controllable delay.

14. Both Mr. Fairchild's and Mr. DeStefano's arguments that exclusion of AFUDC is not a proper remedy, suffer from infirmities. Mr. Fairchild assumes without proof that ratepayers have a higher time value of money than the utilities, while Mr. DeStefano made mathematical errors and questionable assumptions. However, we find it necessary to only address the conceptual arguments. Both witnesses basically argue that if the construction schedule had not encountered delays, ratepayers may have had to pay for a lower cost plant but they would have had to pay for it earlier. Consequently, the argument goes, ratepayers benefited from the delays because they had use of their money longer than would have been the case with earlier completion of the project.

15. In this portion of the order, the Commission is determining what Wolf Creek plant construction costs are reasonable. This assumes that a utility, in constructing a plant, has an obligation to build the facility in an efficient manner and at a reasonable cost. There is no question that delays in the construction schedule increase the total costs of the plant, just as much as increases in

direct costs of the plant. It strains credibility to suggest that when the total costs of the plant increase unreasonably, the ratepayers are not harmed because they avoid paying for the plant earlier. Such a determination would mean that utilities have no incentive to finish projects without unnecessary delays because increases in costs would be passed on automatically to ratepayers. Utilities could prolong construction indefinitely without facing any consequences of inefficient or unreasonable construction management practices.

16. This is not to suggest that recognition of the ratepayers' time value of money is always inappropriate. Clearly, in some circumstances, it is a factor which must be considered. In this context, however, it is not reasonable to even attempt to determine whether ratepayers benefited from construction delays. In addition to posing the wrong question, such an analysis requires questionable assumptions to be made. For instance, Mr. DeStefano's analysis assumed full rate base treatment of Wolf Creek under both the February 1984 and April 1985 completion date scenarios. Given our decisions in other portions of this order, such assumptions are unwarranted. We cannot speculate what rate base treatment would have been accorded Wolf Creek had it been completed fourteen and one-half months earlier. We may safely assume, however, that under the considerations we apply today, the treatment of Wolf Creek could vary over time. We find that exclusion of AFUDC associated with the controllable delay is a reasonable method of quantifying the cost of that delay.

17. We recognize that there is no single precise method of quantifying the AFUDC costs of controllable slippage at the Wolf Creek project. Although we find merit in Mr. Fairchild's quantification method, we are not completely without reservation concerning its use. First, it quantifies the AFUDC based on expenditures to date rather than total projected costs. Historically,

the percentage of AFUDC expenditures has lagged behind the percentage of construction complete. In this manner Mr. Fairchild's analysis may understate the amount of AFUDC attributable to the delay since the entire project, not merely a portion of it, was delayed. Second, we believe that increases in actual direct costs could be associated with the delays which might be included in PMA's determination. Indeed, applicant's arguments ignore the fact that construction delays allow inflationary impacts to increase the costs of construction beyond the increased AFUDC. Third, Mr. Fairchild's analysis ignores the increased cost of capital to the owners which resulted as completion of the project was delayed.

18. Nevertheless, we conclude that Mr. Fairchild's quantification of AFUDC is a more reasonable proxy of the AFUDC costs associated with the controllable schedule delay than the PMA analysis. The PMA analysis, we believe, overstates the amount of AFUDC attributable to controllable delay. We find determining the difference between actual and what should have been incurred had no delay occurred, is the more reasonable method of quantifying controllable schedule slippage. The $166,189,000 of AFUDC calculated shall be apportioned among the owners as allocated by Mr. Fairchild in his analysis: KG&E: $73,286,000; KCPL: $77,092,000; KEPCo: $15,811,000. (Tr. Vol. XXXII, p. 9636).

19. To this amount of AFUDC, we must add the indirect/overhead costs calculated by PMA as associated with the controllable delay. This yields a total of $244,561,400 as the cost of the 14.5 months controllable schedule slippage. We find that this amount should be excluded from total WCGS construction costs. When the disallowed costs are apportioned among the owners as directed above, each owner's share of WCGS construction costs disallowed as inefficiently and imprudently incurred, is as follows: KG&E: $110,121,028; KCPL:

$113,927,028; KEPCo: $20,513,344. We deny recovery of and a return on this part of each respective owners' investment in WCGS.

V. NEED FOR CAPACITY

A. *INTRODUCTION*

1. The Commission has received and considered with interest the testimony and exhibits of Dr. Richard A. Rosen in these proceedings concerning the economic loss expected to be incurred as a result of the commercial operation of Wolf Creek. (Rosen, TR. Vol. XXIII, XXIV, and XXV). As indicated *infra*, the Commission's findings implicitly accept Dr. Rosen's conclusions that large economic losses would result to the customers of KCPL from full rate base treatment of Wolf Creek, that Wolf Creek represents excessively expensive capacity, and that risk sharing principles should be applied in these dockets to properly apportion responsibility for excessive costs between KCPL ratepayers and shareholders. The Commission has been influenced, however, by the argument in KCPL's brief that:

> Dr. Rosen admits that his analysis is subject to "considerable uncertainty" in its underlying projections. (TR. XXIII, 6771). He also admits that his analysis becomes even more uncertain as it goes out in time. (KCPL Brief, p. 107).

In the view of the Commission, projections made by KCPL witnesses on the same subject are vulnerable to the criticisms KCPL has leveled at Dr. Rosen. Additionally, it appears to the Commission that KCPL witnesses proposed projections much more questionable than those sponsored by Dr. Rosen, (for instance, Fitzpatrick, TR. Vol. XXVII and XXVIII; Branca, TR. Vol. XXXVI). Nevertheless, the Commission finds that the life cycle cost analyses presented are subject to a degree of uncertainty and the Commission chooses to base its

decision on what it believes to be a more objective standard.

2. The Commission finds that analysis of the need for Wolf Creek capacity and the reasonableness of the cost of Wolf Creek capacity should be addressed independently. KCPL's need for Wolf Creek capacity will be addressed in this section of the Order. The remaining question of the reasonableness of the cost of Wolf Creek capacity will be addressed in Section VI of the Order.

B. *APPLICATION OF THE "USED AND REQUIRED TO BE USED STANDARDS".*

1. K.S.A. 1984 Supp. 66-128 provides, in pertinent part, that the Commission:

> . . . shall determine the reasonable value of all or whatever fraction or percentage of the property of any common carrier or public utility governed by the provisions of this act which property is *used and required to be used* in its services to the public within the state of Kansas, whenever the commission deems the ascertainment of such value necessary in order to enable the Commission to fix fair and reasonable rates, joint rates, tolls and charges. (Emphasis added).

The Commission deems the ascertainment of the reasonable value of public utility property to be necessary in these dockets in which KCPL seeks a return of and a return on investment and, consequently, the Commission deems it appropriate to determine whether all or a fraction or percentage of KCPL's interest in Wolf Creek is used and required to be used in its services to the public.

2. If public utility property is not found to be used and required to be used, a deferral or "phase-in" of costs into rate base and an exclusion of carrying costs on the value of property deferred is permissible in accordance

with the terms of K.S.A. 1984 Supp. 66-128b which provides as follows:

> The Commission may require a public utility to defer inclusion of all or any portion of the reasonable value of property determined not currently used and required to be used and may require the phase-in of such value over any period of time and in such increments as it determines to be appropriate. If the Commission requires a public utility to defer the inclusion of any portion of such reasonable value and orders a phase-in of such value, it may exclude any or all of the carrying or finance costs incurred after the date of its determination and throughout the period of any deferral or phase-in as so ordered.

However, if the Commission determines that all or a portion of the costs of acquisition, construction, or operation of a generating facility were incurred due to a lack of efficiency or prudence or were incurred in the acquisition or construction of excess capacity, then the Commission may exclude all or a portion of such costs from eligibility for recovery through rates in accordance with K.S.A. 1984 Supp. 66-128c which provides as follows:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.
>
> For the purpose of this act, "excess capacity" means any capacity in excess of the amount used

and required to be used to provide adequate and reliable service to the public within the state of Kansas as determined by the commission. The commission may in its discretion prohibit or reduce the return on costs which were incurred in constructing, maintaining or operating excess capacity.

3. With the exception of Hawthorn Units 1 through 4, each generating facility on the KCPL system, including Wolf Creek, will be employed in the near term to serve KCPL system energy requirements. (Evans, TR. Vol. XIV, p. 4140; KCPL Brief, p. 94). The fact that Wolf Creek should perform at a relatively low incremental operating cost, thereby requiring its use from an economic dispatch perspective, is implicit in Dr. Rosen's prospective Wolf Creek-In economic analysis which dispatches each of KCPL's units (Rosen, TR. Vol. XXIII, XXIV, and XXV) and was explicitly confirmed by KCPL witness Evans (Evans, TR. Vol. XIV, p. 4141). No party has argued that Wolf Creek will not be used to provide service to KCPL's customers. The Commission finds that Wolf Creek will be "used" by KCPL within the intent of K.S.A. 1984 Supp. 66-128 *et seq.*

4. Whether Wolf Creek is "required to be used" by KCPL in its services to the public within the State of Kansas is dependent upon a number of factors which do not remain static over time. As a result, the Commission's findings concerning the degree to which Wolf Creek is required to be used by KCPL must necessarily be revisited in subsequent rate proceedings as system characteristics such as available capacity and demand change. On one prior occasion the Commission interpreted and applied the "used and required to be used" standard to the application of an electric utility seeking partial rate base treatment and phase-in of a new generating facility. *In the Matter of the Application of Sunflower Electric Cooperative, Inc.*, Docket No. 143,069-

U, 84-SNFE-369-R, the Commission considered the ratio of Sunflower's peak demand plus reserves to its available capacity. The Commission found that:

> (t)hese indicators suggest that a percentage of the Holcolmb Unit approaching but slightly less than 60% is currently used and required to be used. (KCPL Brief, p. V-5).

The "indicators" employed by the Commission in the *Sunflower* case are suitable for application in the captioned dockets because the question of whether generating capacity is "required to be used" cannot be determined in the absence of an analysis of peak demand, reserve margin and available capacity.

5. Peak responsibility must necessarily be quantified with reference to a particular point in time. KCPL has correctly noted in its brief that:

> As was noted more fully in Section II above, this Commission and the Kansas Supreme Court have recognized that "electric utilities must plan for the future," and "to construct generating plants only when the need arises is, of course, ridiculous, and to construct it only for those needs without anticipating future growth would be even more ridiculous." *Kansas Gas & Electric Company v. State Corporation Commission*, 218 Kan. 670, 544 P.2d 1396, 1402 (1976). (KCPL Brief, p. 94).

Due to the fact that baseload generating facilities are not likely to be brought into service in discrete segments exactly paralleling changes in demand (Doyle, TR. Vol. XIII, p. 3567), the Commission believes that an analysis of peak responsibility for the purpose of identifying facilities "required to be used" must incorporate a planning horizon perspective. To hold otherwise would create a future disincentive to the construction of facilities which constitute the most economic type of capacity for

the particular system on a *scale* that would provide additional economies to the system.

6. Dr. Rosen filed in these proceedings a KCPL load and capability forecast for the nine year period 1985-1993. [Exhibit G-Staff-127 (RAR-4.4)]. The selection of a forecasted reference year for an analysis of peak responsibility is made somewhat more difficult by the fact that no witness in these proceedings proposed specific standards for the selection of such a reference point. In the absence of such specific standards, the Commission finds it reasonable to select a forecasted reference year from a range of years between one-half and two-thirds of the duration of the KCPL load forecast. Due also to the absence of evidence concerning specific standards, the Commission chooses to select as the reference year the final year of the range it has found reasonable. Use of 1990 as a reference year for this analysis allows for five years of projected growth in peak demand. Five years roughly corresponds to the period required to put into operation a combustion turbine peaking unit which is an appropriate consideration in this case. It is apparent from the record that applicant not only has no actual current need for capacity, but had no projected need during much of the time Wolf Creek was being constructed. Instead, the decisions to construct and continue were based on other factors. It is consequently evident that purely from a need for capacity perspective, applicant's facilities were sufficient to meet projected demand and it could have met unexpected changes in forecasted demand by construction of a combustion turbine peaking unit. It is reasonable, therefore, to allow a five year planning period. Exhibit G-Staff-127 (RAR-4.4) indicates that KCPL's forecasted peak responsibility for 1990 will be 2,324 megawatts.

7. The question of the appropriate reserve margin to be allowed KCPL in determining the degree to which Wolf Creek is "required to be used" received the atten-

tion of a number of witnesses. In the view of the Commission, sole reliance upon the reserve requirement of 15 percent established by the MOKAN power pool for its members as an indicator of the appropriate utility-specific reliability reserve is inappropriate as demonstrated by the testimony of Mr. Limmer:

> The MOKAN Power Pool agrees on 15 percent as a minimum reserve under which if somebody comes under that, that they would have to pay an equalization payment. (Limmer, TR. Vol. XV, p. 4262).

Evidence presented by KCPL indicated that the minimum reserve capacity necessary to provide adequate and reliable service for the KCPL system is 23 percent (Limmer, TR. Vol. XV, p. 4259). KCPL, however, is apparently advancing only a 22 percent reserve margin (Evans, TR. Vol. XV, p. 4190-4191). Based upon a reliability analysis prepared by Dr. Rosen, the staff presented evidence indicating that both KG&E and KCPL require a 22 percent reserve margin with Wolf Creek in operation and a 15 percent reserve margin without Wolf Creek in operation. (Rosen, TR. Vol. XXIII, p. 6600-6609). Dr. Rosen noted, however, that based upon his system reliability analysis of both KG&E and KCPL, a 15 percent reserve margin is satisfactory for maintaining adequate system reliability and that reserves in excess of 15 percent should be justified on economic, not reliability, grounds. (Rosen, TR. Vol. XXIII, p. 6617). As indicated in Section VI of this Order, the Commission has found that Wolf Creek capacity is not fully cost justified in relation to alternative generation resources at the present time and that the risk-sharing principles advocated by Dr. Rosen (Rosen, TR. Vol. XXIII, p. 6712-6734) are reasonable and require allocation of responsibility for excessive capacity costs between KCPL's shareholders and ratepayers. Because Wolf Creek is not fully justified on economic grounds, the Commission finds that ratepayer responsibility for a full 22 to 23 percent

reserve margin is unreasonable and that the risk-sharing principles of Dr. Rosen discussed fully, *infra*, require an allocation of responsibility for necessary reserves between ratepayers and shareholders. The Commission's finding is supported by the fact that:

> For KCPL, almost one-third of its share of Wolf Creek's capacity (about 168 MW in 1992) is needed solely to provide the seven percent increase in required system reserves directly caused by Wolf Creek itself (peak load is forecast at about 2400). [Rosen, TR. Vol. XXIII, p. 6617-6618].

8. Dr. Rosen testified that a 15 to 20 percent reserve margin was normally deemed adequate for a large, well interconnected system (Rosen, TR. Vol. XXIII, p. 6602) and that:

> . . . most well interconnected utility systems in the U.S. plan on the basis of reserve margins in the 15 to 20 percent range for reliability. (Rosen, TR. Vol. XXIII, p. 6609).

Mr. Lanzalotta testified that "15 to 20 percent is by far the predominant target planning level for utility reserve margins in the central U.S. region" (Lanzalotta, TR. Vol. A-7, p. 1599). Dr. Rosen noted that reserve margins slightly above 20 percent may be required in certain circumstances, particularly if the system relies heavily upon large nuclear units which have relatively high outage rates, but that the degree of interconnection with other utility systems could moderate the impact because:

> . . . with sufficient interconnection even heavily nuclear utilities may not need high reserves. One such utility, Commonwealth Edison, plans its system on the basis of a 15 percent reserve margin for reliability purposes. (Rosen, TR. Vol. XXIII, p. 6602-6603).

Dr. Rosen concluded that certain important features of the MOKAN Power Pool and the Wolf Creek co-owners systems tend to situate the companies at the low end of the 15 to 20 percent reserve requirement range because the systems tend to have greater or equal levels of reliability at lower levels of reserves. (Rosen, TR. Vol. XXIII, p. 6610). Among the features cited by Dr. Rosen are the following:

> The MOKAN Power Pool has an annual load factor of about 49 percent. This is much lower than the national average load factor of about 61 percent. . . . All three co-owners have load factors at or below 50 percent. . . . These utilities are sharply peaking in the summer. This circumstance provides substantial scope for scheduling maintenance during periods when reliability is high. The consequence of this is that very few hours during the year are likely to contribute to the loss of load probability and the peaking facilities and load management technologies are more likely to be cost-effective options for maintaining reliable service than in more typical systems. (Rosen, TR. Vol. XXIII, p. 6610).
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> * * * *
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> The MOKAN Power Pool also has a reliability advantage, as compared with many other systems, deriving from the absence, thus far, of nuclear generating facilities in the resource mix. About 70 percent of installed capacity is coal-fired, the rest being dual-fuel steam turbines and peaking facilities. Moreover, the system is dominated by a large number of relatively small generating units. (Rosen, TR. Vol. XXIII, p. 6611).
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> * * * *
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> Finally, the MOKAN Pool is well situated geographically for bulk power support. As part of the Southwest Power Pool or SPP (actually not a pool but a NERC regional reliability council) MOKAN has

transmission links to the Oklahoma systems, via 345 KV networks in central and eastern Oklahoma and Kansas, and via a 230 KV tie in western Kansas and the Oklahoma-Texas Panhandle region. Interties to other regional reliability councils, directly to MAPP to its north and MAIN to its east, and indirectly to others, affords the MOKAN system substantial emergency support to maintain reliable service in the event of unusual generation outages and/or load surges. Simultaneous import capability (i.e., transmission system transfer limits into MOKAN) has been estimated at above 3000 MW. (Rosen, TR. Vol. XXIII, p. 6611-6612).

Further, the Commission notes that for a number of years predating commercial operation of Wolf Creek, KCPL maintained that a 20 percent reserve was required based upon a 1980 Ebasco loss of load probability study. (Evans, TR. Vol. XIV, p. 4146). Based upon the evidence in these dockets, the Commission finds that a 15 to 20 percent reserve margin is adequate for KCPL system reliability and that, due to the commercial operation of Wolf Creek, a margin at the top of the range found adequate for system reliability should be implemented for ratemaking purposes. The Commission finds that a reserve in excess of 20 percent should be justified from an economic perspective. The Commission has found in Section VI of this order, *infra*, that Wolf Creek capacity is not fully cost justified in relation to alternative generation resources at this time.

9. Having determined that a 1990 forecasted reference year should be used to determine peak responsibility on the KCPL system, a 1990 forecasted reference year must necessarily also be used to analyze available system capacity. Exhibit G-Staff-127 (RAR 4.4) indicates that KCPL's available capacity in 1990 will be 2,973 megawatts. (*See*, also, Evans, TR. Vol. XV, p. 4305). Exhibit G-Staff-127 (RAR-4.4) assumes that Wolf Creek will be rated at a net capacity of 1117 megawatts in

accordance with the testimony of KG&E witness Lucas. (Lucas, TR. Vol. XII, p. 3104). KCPL's 1990 forecasted available system capacity of 2,973 megawatts is exclusive of the capacity represented by Hawthorn Units 1 through 4 which were "retired" in place December 31, 1984. (Trask, TR. Vol. A-7, p. 1879). "Retirement" may not be as appropriate a term to describe the status of the units as "mothballed" due to the fact that KCPL has "spent about three-quarters of a million dollars" to preserve the units for future use. (Trask, TR. Vol. A-7, p. 1893). Prior to the "retirement," Hawthorn Units 3 and 4 were placed on inactive reserve in 1983 and Units 1 and 2 were placed on inactive reserve in 1984 [Exhibit G-KCPL-46, Schedule 4; Exhibit G-Staff-127 (RAR-2.3); *See* also Evans, TR. Vol. XV, p. 4166]. Several witnesses testified that the Hawthorn units were prematurely "retired" and should be included as available capacity for the purpose of determining utility property "used and required to be used." [Rosen, TR. Vol. XXIII, p. 6543, 6621; Exhibit G-Staff-127 (RAR-4.6)]. Mr. Lanzalotta testified on behalf of the Johnson County Joint Intervenors as follows:

> KCPL has placed Hawthorn Units 1-4 in "inactive reserve" pending their planned rehabilitation sometime in the 1990's. (Lanzalotta, TR. Vol. A-7, p. 1589).
>
> * * * *
>
> KCPL has eliminated Hawthorn Units 1-4 from consideration as sources of generating capacity to KCPL in its preparation of its load/resource projections. KCPL accomplishes this by placing these units in what it terms "inactive reserve". (Lanzalotta, TR. Vol. A-7, p. 1589).
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> * * * *
>
> I disagree with KCPL's treatment of Hawthorn Units 1-4 in its preparation of its load/resource projection. If KCPL were not in an excess capacity

situation, it would be using these units as evidenced by KCPL's plans to use these units in the 1990's when KCPL's projections indicate a need for additional capacity. (Lanzalotta, TR. Vol. A-7, p. 1589).

* * * *

By placing Hawthorn Units 1-4 in "inactive reserve" many years prior to these units' scheduled retirement, KCPL is in effect admitting that a substantial portion of the Wolf Creek capacity is excess to KCPL's capacity needs for 1985 until the scheduled retirement dates of the Hawthorn Units. (Lanzalotta, TR. Vol. A-7, p. 1590).

* * * *

KCPL has projected that the retirement dates of the Hawthorn Units 1-4 for planning purposes would range from 1991-1993. This is based upon KCPL's KCPLAN for 1981 in which KCPL states "KCPL projects retirement of fossil steam units after 40 years of service" (page 35). In the same document, KCPL lists the in-service dates for Hawthorn Units 1-4 as occurring from 1951-1953. The application of KCPL's 40-year steam unit life with the in-service dates of Hawthorn Units 1-4 (which, incidentally, are fossil-fired steam generating units) yields projected retirement dates for these units from 1991-1993.

Page 80 of KCPLAN81, which was published on October 1, 1981, lists the projected retirement dates of the Hawthorn Units 1-4. As shown on Exhibit A-JCI-28 (PJL-1), which is copied from KCPLAN 81, Hawthorn 1-2 are scheduled to be retired in 1991, Hawthorn 3 is scheduled for retirement in 1993, and Hawthorn 4 is scheduled for retirement in 1995.

KCPL's PURPA FERC Form 133 filed with the Federal Energy Regulatory Commission in 1980 lists specific projected retirement dates for Hawthorn

> Units 1-4. These projected retirement dates agree with the dates listed in the 10/1/81 KCPLAN81. Based on these sources, it seems fairly certain that as recently as 1981, KCPL planned to retire the Hawthorn Units in the 1990's. (Lanzalotta, TR. Vol. A-7, p. 1590-1591).
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> * * * *
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> Since KCPL has projected retirement of the Hawthorn Units in the early 1990's, it seems reasonable to include the capacity from these units in KCPL's load/resource projection, at least up through the time period in which the retirement of these units is forecast. (Lanzalotta, TR. Vol. A-7, p. 1592).

The testimony of KCPL witness Evans indicated that KCPL had "retired" Hawthorn Units 1 through 4 in only an accounting sense and that the units were or could be, with some rehabilitation, available for use in meeting KCPL system requirements:

> Our plans now are to rehabilitate the Hawthorn old side units at some point in time when the capacity from those units will be needed, and that rehabilitation is an alternative to the construction of new generation. So retirement in my mind is an accounting decision and the accountants have decided to retire the facilities. That doesn't preclude returning them to service in a rehabilitated state at some future point in time and that in fact is our current plan. Now, whether or not we actually do that or not, I think time and study and analysis will tell us the answer to that. (Evans, TR. Vol. A-7, p. 1854).

Based upon the evidence in the captioned dockets it appears that Hawthorn Units 1 through 4 have been "mothballed" for possible future use. At least as late as 1981, KCPL projected retirement dates for Hawthorn Units 1 through 4 subsequent to the 1990 reference year the Commission has chosen for analysis of capacity available to KCPL. The evidence indicates that the useful

life of the Hawthorn units may well be extended beyond the early to mid-1990's by anticipated rehabilitation efforts. Hawthorn Units 3 and 4 were placed in inactive reserve prior to Units 1 and 2 [Exhibit G-KCPL-46, Schedule 4; Exhibit G-Staff-127 (RAR-2.3)]. It is implicit in the schedule of placement of units in inactive reserve that Units 1 and 2 remain in a superior operating condition relative to Units 3 and 4. That conclusion is confirmed by the fact that it would cost approximately twice as much to rehabilitate each of Units 3 and 4 as it would to rehabilitate each of Units 1 and 2 (Trask, TR. Vol. A-7, p. 1880-1884). The Commission finds that the MOKAN accredited capacity of Hawthorn Units 1 and 2 shall be deemed available for use by KCPL in the 1990 reference year. The MOKAN accredited capacity of Hawthorn Units 1 and 2 collectively appears to have been 130 megawatts at the time the units were placed in inactive reserve. (Exhibit G-KCPL-46, Schedule 4). The Commission further finds that capacity available for use by KCPL shall be computed by increasing forecasted year 1990 available capacity of 2,973 megawatts [Exhibit G-Staff-127 (RAR-4.4)] by the MOKAN accredited capacity of Hawthorn Units 1 and 2 (or 130 megawatts) [Exhibit G-KCPL-46, Schedule 4] for a total of 3,103 megawatts of available capacity.

10. The Commission finds that 314 megawatts of KCPL's interest in Wolf Creek is not required to be used in its services to the public within the State of Kansas. That figure is computed as indicated below:

Available Capacity (megawatts)		3,103
Peak Responsibility in 1990 Reference Year (megawatts)	2,324	
Reserve Requirement Percentage of Peak	x .20	
Megawatts	465	
Peak plus Reserve (megawatts)		2,789
Capacity in Excess of Peak Plus Reserve (megawatts)		314

11. The Commission finds that the portion of Wolf Creek found not "required to be used" by KCPL in its services to the public within the State of Kansas in paragraph 10 above shall be ineligible to earn a return on investment in accordance with the terms of K.S.A. 1984 Supp. 66-128c which provides that:

> The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.

The Commission has found, however, at paragraph 3 of this Section, *supra*, that Wolf Creek will be used by KCPL in its services to the public within the State of Kansas as that term is contemplated by K.S.A. 1984 Supp. 66-128. The Commission therefore finds that KCPL is entitled to a return of (through depreciation on) its investment in the 314 megawatts of Wolf Creek found to be excess in paragraph 10 above.

VI. ECONOMICS OF WOLF CREEK

A. *INTRODUCTION*

1. The Commission has determined above that certain construction costs of Wolf Creek were imprudently and inefficiently incurred and should not be included in rate base and that a further portion of the plant represents physical excess capacity not currently used and required to be used. The remaining issue for determination is the

reasonable value of that portion of Wolf Creek which is reasonably necessary to provide service. This essential question was hotly disputed by the parties. We will not attempt to summarize all the voluminous evidence on this issue but will mention a few of the arguments.

2. Staff witness Rosen presented extensive evidence supporting staff's economic analysis. Dr. Rosen basically argued that an evaluation of physical excess capacity is inadequate in itself to determine whether a new capacity addition imposes unnecessarily high penalties on ratepayers. Staff contends that an economic evaluation is necessary to supplement the engineering evaluation of excess capacity. Dr. Rosen performed such an economic evaluation by comparing the revenue requirements resulting from inclusion of Wolf Creek in rate base with a more optimal alternative in which gas turbines and eventually coal fired generation was added. Dr. Rosen's analysis showed that in 1984 dollars, KG&E ratepayers' face $1.62 billion more in revenue requirements with Wolf Creek than his alternative, while KCPL ratepayers face a cumulative "net loss" of $1.73 billion. Dr. Rosen also concluded that about 85% of these economic penalties occur in the first ten years of Wolf Creek's operation. He further found that the net losses approximately equaled the capital costs, i.e. depreciation and return, of Wolf Creek.

3. Dr. Rosen also performed a retrospective analysis examining the results of cancellation of the plant in 1981. He concluded that, based on information then available, the continuation of the project would have been seen to result in $500 million more in revenue requirements (1984 present value) than cancellation with recovery and return on the sunk construction costs. Approximately one half of the current economic loss is consequently ascribed to the continuation of the project after 1981. Based on these findings, Dr. Rosen recommended that the total economic loss resulting from continuation of the project

after 1981 be accepted by the companies. The remainder, representing basically the sunk costs at the end of 1981, he proposed to split between the ratepayers and the companies.

4. ALERT's witness, Dr. Komanoff, performed a similar analysis applicable to KG&E only. He concluded that based on evidence available in 1979, KG&E should have realized that Wolf Creek would have resulted in a net economic loss to ratepayers of $750 million, and should have cancelled the plant. He recommended that only 7% of the plant be included in rate base.

5. As noted previously, the Johnson County Joint Intervenors contend that for KCPL, Wolf Creek represents entirely physical excess capacity, and further causes operating inefficiencies on the KCPL system. Witness Lanzalotta and Russell testified concerning the need for Wolf Creek capacity, premature retirements of the Hawthorne and Grand Avenue units and minimum load problems caused by the addition of Wolf Creek. Mr. Pflaum proposed a ten-year phase-in plan which would result in rates approximating the long-run incremental costs to the utility.

6. Dr. Sturgeon, on behalf of intervenor Electric Shock Coalition, testified that both KG&E and KCPL have more than adequate base load capacity. Even if there were a supply short fall, Dr. Sturgeon argued that the proper way of meeting demand is to add peaking plants or by off-system power. If Wolf Creek were less expensive than the baseload plants being displaced, it would qualify for rate base treatment, but such a showing is not likely in Dr. Sturgeon's view. He therefore recommended no inclusion of Wolf Creek in rate base.

7. Witnesses testified on behalf of the Hospital and Industrial Intervenors that Wolf Creek represents substantial excess capacity at an extremely high cost. They recommended that shareholders should bear a portion of

the costs with the remainder to be phased-in over a seven year period.

8. Applicant contends that the economic evaluation proposals of staff witness Rosen and ALERT witness Komanoff should not be adopted for several reasons. First, it argues that the Commission has traditionally valued rate base additions at original historic cost and that deviation from that practice after the fact is inequitable and requires advance notice. Furthermore, the company suggests that adoption of a fair value approach by the Commission would have to be applied to all facilities of a utility and not just a new facility. Applicant contends that the analysis performed by Dr. Rosen was too speculative, required thousands of assumptions and was an exercise in hindsight using a "perfection standard".

B. *DISCUSSION*

1. The Commission has concluded that an economic valuation of the Wolf Creek facility is a desirable approach in this case. As more fully discussed below, we believe that the reasonable value of the portion of that facility which is to earn a return is something less than its cost of construction. This approach is not only necessary to ensure reasonable rates, but also is required by the statutory provisions enacted by the 1984 Legislature in House Bill 2927.

2. The Commission is persuaded by the arguments of several parties that Wolf Creek represents not only physical excess capacity in that much of the plant's capacity is not currently needed, but also economic excess in that the capacity that is required is too expensive and uneconomical. As Dr. Rosen testified:

> The broader economic issue of excess physical capacity involves a determination of whether an excess of *certain types* of generating capacity exists (e.g., too much base load relative to cycling and

> peaking). Such a circumstance would result in costs of supplying power that are unreasonably high relative to a system with an economically optimal mix of types of generating capacity. Thus, excess capacity of one type of capacity could exist, even if in the aggregate there is no excess capacity with respect to system reserve requirements for adequate reliability. Additionally, poor economics for new generating units can arise from other factors, including excessively high capital costs and/or the emergence of economically advantageous resource alternatives. The net result of any or some combination of the above factors can be to render a new capacity addition, which may have *initially* been justified, uneconomical under current and expected conditions. (Rosen, TR. Vol. XXIII, p. 6587-6788).

The Commission believes that the type of long term life-cycle economic analysis performed by Dr. Rosen is very beneficial. Indeed, even Applicant appears to concede that this type of analysis is a useful tool for generation planning purposes. Obviously, the overall long-term benefits and costs of a major construction project are essential considerations for not only utility companies but also regulatory commissions. We conclude, however, that we cannot rely on Dr. Rosen's type of analysis to determine the precise valuation of Wolf Creek in this case.

3. As vigorously stated by applicant, the Rosen analysis requires projections into the future of many factors affecting the relative economics of various alternatives. For instance, capacity factors, variable O&M costs, capital additions, replacement power costs, and decommissioning costs were all subjects of extensive debate during the testimony of numerous witnesses. The Commission does believe that, overall, Dr. Rosen's assumptions for these various inputs into the analysis were more reasonable and realistic than applicants' witnesses. If nothing else, his figures had the virtue of consistency whereas the

company witnesses seemed to have made no effort to coordinate their various assumptions, perhaps the most egregious example being the projected cost of capital additions necessary for Wolf Creek. The company witnesses presented testimony predicting such costs which ranged from $10 million to $81 million annually. Although we therefore believe that Dr. Rosen's conclusions are good indications of the overall economics of Wolf Creek, we are reluctant to base a precise valuation of the plant on those results. We have concluded instead that a more near term approach requiring fewer projections should be used, as set forth below.

4. The Commission is not persuaded, moreover, by the applicant's argument that a "fair value" valuation of Wolf Creek is inequitable. First, and perhaps most important, the Kansas legislature has appeared to require examination of the economics of a rate base addition. Under the provisions of K.S.A. 1984 Supp. 66-128g(a) the Commission must consider a number of factors in determining prudence and the reasonable value of electric generating property. Those factors include:

(1) A comparison of existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that utility;

(2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;

(5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

(9) whether inclusion of all or any part of the cost of construction of the facility under consideration, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest of Kansas;

(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

This statutory mandate compels consideration of the economics of a plant in determining the reasonable value of a rate base addition and also provides notice to the utilities of the general standards to be used. Further, as discussed more subsequently, we do not believe that use of an economic valuation approach is required for all utility plants as suggested by applicant.

5. In considering the appropriate valuation for Wolf Creek, the Commission believes that the appropriate factors may be grouped into several salient sets of facts: The applicant's decisions to initiate and continue construction of a nuclear generating facility; the economic costs to ratepayers and the company of the resulting rates; and the risks assumed by the company and shareholders.

Decisions to Build and Continue

1. Applicant KG&E, as noted above, based its decision to undertake construction of a nuclear generating facility

on the perceived need to achieve fuel diversity. KG&E, reliant on gas-fired generation in the late 1960's, began examining coal and nuclear generation in its planning in view of apparent impending shortages of natural gas for use in generation facilities. The 1978 Federal Fuel Use Act confirmed the natural gas shortage by restricting use after 1989 to peaking units (those operating less than 1,700 hours per year.) KG&E contends that even though the Fuel Use Act was amended in 1981 to remove restrictions on existing generation plants, it still is obligated to reduce its dependence on natural gas by 50%. Further, KG&E argues that although use of coal is now encouraged by national energy policy, concerns about "acid rain", increased coal transportation costs due to railroad deregulation and the possibility of a coal mine strike pose risks to heavy reliance on coal. Applicant KCPL contends that it also based its decision to build a nuclear facility on the perceived need to achieve fuel diversity. Heavily reliant on coal generation, the company was concerned about possible escalating costs for coal, supply disruptions and environmental difficulties. The company also was aware of the increasing scarcity of oil and natural gas.

2. Staff witness Rosen did not dispute the prudence of the companies' initial decision to build a nuclear plant. He, however, contended that the companies had an obligation, in view of the magnitude of the Wolf Creek project and the economic risk involved, to engage in regular reviews to determine if continuation was a prudent policy. He concluded that the companies' planning exercises were too infrequent and deficient in both design and execution.

3. KG&E witness Roen testified that between 1968 and the date of the filing of KG&E's rate case in these dockets, no outside consultants prepared for KG&E an independent economic life cycle coal versus nuclear cost analysis. (Roen, TR. Vol. VI, p. 1646).

4. An analysis was performed for KG&E by Ebasco Services, Inc., in February, 1971, favoring participation

in construction of two large nuclear units (1,100 MW each) to come on-line in 1978 and 1980. (Rosen, TR. Vol. XXIII, p. 6568).

5. KG&E witness Roen testified that KG&E staff prepared internal coal versus nuclear cost comparisons in 1973, 1975, 1976, 1978, 1979 and 1980. (Roen, TR. Vol. VI, p. 1646). (Exhibits G-Staff-22 through 27). Mr. Roen indicated that KG&E's 1973 study (Exhibit G-Staff-22) was "probably not" state-of-the-art but characterized the 1975 studies (Exhibits G-Staff-23 and 24) as a "good piece of work". (Roen, TR. Vol. VI, p. 1686). KG&E's 1976 economic cost-benefit study of Wolf Creek compared to alternatives consisted of a one page levelized bus bar energy bar chart for a 10 year period of analysis (Roen, TR. Vol. VI, p. 1690, Exhibit G-Staff-25) which, by definition, was not a life cycle economic cost analysis for either the nuclear or coal facilities analyzed. (Roen, TR. Vol. VI, p. 1691). Among other weaknesses, the 1976 analysis assumed it would cost as much to operate and maintain a coal plant as it did to operate and maintain a nuclear plant (Roen, TR. Vol. VI, p. 1694), assumed the capacity factor for a nuclear plant would exceed the capacity factor for a coal plant (Roen, TR. Vol. VI, p. 1698), ignored capital additions and decommissioning expense for the nuclear facility (Roen, TR. Vol. VI, p. 1697, 1703), and did not address the need for capacity. (Roen, TR. Vol. VI, p. 1705). The scope of KG&E's 1978, 1979 and 1980 "economic" cost benefit analyses of the coal-versus-nuclear options (Exhibits G-Staff-26, 27 and 28) and most of the assumptions found therein are the same or similar to the company's 1976 analysis described above. (Exhibit G-Staff-24). (Roen, TR. Vol. VI, p. 1705 through TR. Vol. VII, p. 1765). During the cross-examination testimony of KG&E witness Lucas, the witness indictated that analyses of Wolf Creek economics were prepared by KG&E employing a longer than ten year planning horizon, but that documentation of such analyses were unavailable:

> As I indicated earlier, this is one—that was one of several things that we looked at, and it may have been on the back of an envelope, but it was very definitely done; and in those days, you didn't keep all of the envelopes that you worked on. (Lucas, TR. Vol. XII, p. 3176).

It is interesting to note that KG&E's 1980 ten-year levelized bus bar energy cost comparison found a coal facility to be more economical than a nuclear facility (Roen, TR. Vol. VII, p. 1733), and that thereafter KG&E discontinued preparation of what had become an annual one-page analysis.

6. In May of 1980, Ebasco Services, Inc. submitted to KG&E a review and critique of the KG&E nuclear-versus-coal studies. At that time, the construction of the Wolf Creek generating station was well underway. The 1980 Ebasco study endorsed the earlier KG&E findings favoring the economics of the nuclear project. In terms of the initial decision, the report stated:

> KG&E's 1973 decision to proceed with a nuclear project was reasonable from an economic viewpoint as indicated in KGE-1, *Generator Addition Study (Early Eighties Coal vs. Nuclear)*, 1973.

With respect to the subsequent analyses, the 1980 report stated:

> . . . it is Ebasco's conclusion that a complete and realistic comparison made after 1973 of alternatives to the Wolf Creek Generating Station Unit 1 will indicate a significant economic advantage in favor of WCGS 1.

(Rosen, TR. Vol. XXIII, p. 6568-6569).

7. A 1981 study was completed for the entire MOKAN power pool by Gilbert/Commonwealth, Inc. While there are certain cost comparisons of various planning scenarios, the study did not analyze the economics of the

then current generation plans of the member utilities. The Gilbert/Commonwealth analysis was concerned with longer range generation planning strategies and assumed the projected completion dates for plants already planned. (Rosen, TR. Vol. XXIII, p. 6570).

8. According to Dr. Rosen, KCPL appears to have been highly reliant on the analyses performed by KG&E concerning the relative economics of nuclear power units and of Wolf Creek specifically. (Rosen, TR. Vol. XXIII, pp. 6574-6575). Mr. McPhee referenced a number of economic comparison studies in his testimony which purported to demonstrate the economic superiority of Wolf Creek over coal-fired or other types of generation. Mr. McPhee cited a 1971 study entitled "Generation Expansion Study After LaCygne 1." (McPhee, TR. Vol. XIV, p. 3838). The study covered only a 10 year time period from 1975-1985 (McPhee, TR. Vol. XIV, p. 3980) and recommended a plan which included 550 MW of combustion turbine power, 100 MW of purchased power, and 300 MW of nuclear power. (McPhee, TR. Vol. XIV, p. 3982). The 1971 report omitted information concerning the assumptions used to calculate decommissioning costs, nuclear spent fuel handling, storage, transportation, and disposal costs, and capital additions. The study failed to address the need for capacity. (McPhee, TR. Vol. XIV, p. 3993). KCPL did not follow the generation plan recommended by the study (McPhee, TR. Vol. XIV, pp. 3982-86). The study incorporated an analysis of Wolf Creek over only the first five to six years of its operation. (McPhee, TR. Vol. XIV, p. 3986). The 1971 report did not compare the relative economic costs of a single nuclear unit to a single coal unit with all other generation planning factors remaining equal. (McPhee, TR. Vol. XIV, p. 3986).

9. Mr. McPhee's prefiled testimony (McPhee, TR. Vol. XIV, p. 3839) made reference to a KCPL nuclear-versus-coal study prepared in 1974. Unfortunately, this

study also suffers from a limited time frame of analysis (1982-1992) and a dearth of information on underlying assumptions. Mr. McPhee admitted, on cross-examination, that at any nuclear capacity factor less than 70 percent, a coal plant was shown to be economically superior to a nuclear plant. (McPhee, TR. Vol. XIV, p. 3995).

10. Exhibit G-Staff-56 is a KCPL generation expansion study dated April 1975. The study covered only the first 15 years of the expected life of Wolf Creek. (McPhee, TR. Vol. XIV, pp. 4017-18). The study did not compare the relative economic costs of a single nuclear unit to a single coal unit with all other generation planning factors remaining equal. (McPhee, TR. Vol. XIV, p. 4018). The study concluded the most desirable planning option was one which provided for Wolf Creek nuclear power in 1982, reduction of the current capital budget requirements by deferring Iatan from 1980 to 1985 and installation of gas turbines. (McPhee, TR. Vol. XIV, p. 4020). This, once again, was a recommendation which KCPL chose not to adopt. (McPhee, TR. Vol. XIV, 4021). In fact, Mr. McPhee testified during cross-examination that the actual generation plan KCPL chose was the next to highest cost option studied. (McPhee, TR. Vol. XIV, p. 4022).

11. Exhibit G-Staff-201 is a KCPL levelized bus bar energy cost comparison of the Wolf Creek and Iatan facilities prepared in May 1980 for the study period 1983 through 2012. (Evans, TR. Vol. XXXVIII, p. 11296). Units of different sizes were being compared (Evans, TR. Vol. XXXVIII, p. 11297). Operating and maintenance costs were assumed to be higher for a coal plant than for a nuclear plant. (Evans, TR. Vol. XXVIII, p. 11297). The capacity factor of the nuclear plant was assumed to equal the capacity factor of the coal plant. (Evans, TR. Vol. XXVIII, p. 11297). Capital additions for the nuclear and coal facilities were not analyzed. (Evans, TR. Vol. XXXVIII, p. 11300). Decommissioning

expense and nuclear spent fuel handling, storage, transportation and disposal cost assumptions were not stated. (Evans, TR. Vol. XXXVIII, pp. 11300-11301). The analysis did not attempt to determine the most economic size of unit for the KCPL system given the need for capacity at the time. (Evans, TR. Vol. XXXVIII, p. 11301). The conclusion of the analysis that the levelized bus bar energy cost of Iatan would be greater than Wolf Creek resulted "principally because of the shorter book life." (Evans, TR. Vol. XXXVIII, p. 11302).

12. By 1976, KEPCo had begun an investigation of various power supply options with the objective of allowing the cooperative to become an owner of generating facilities and a transmitter of electrical power. In addition to investigating participation in such coal-fired plants as the Jeffrey Energy Center and Iatan, KEPCo engaged a consultant to conduct a feasibility study of KEPCo's participation in Wolf Creek. A preliminary feasibility study completed in early 1977 indicated the desirability of KEPCo becoming involved in the construction of Wolf Creek, suggesting a 17 percent ownership share of the plant. However, the report did not include a comparison of alternative power supply scenarios. Rather, it compared the costs of electricity to the cooperatives over time (including Wolf Creek power availability) with and without KEPCo acting on their behalf as a direct participant in the Wolf Creek project. Another weakness in the analysis was that the demand projections employed were out-of-date because of reliance on a 1973 Power Requirements Study. (Rosen, TR. Vol. XXIII, p. 6577).

13. KEPCo witness Mulholland agreed that Schedule 2, Section 2, Volume 1, of the March 1977 report (Exhibit C-Staff-22) concluded that cooperatives in the KG&E service area would sustain an $8,000,000 loss by associating with KEPCo if KEPCo was a co-owner in Wolf Creek. (Mulholland, TR. Vol. C-3, p. 789). He further

conceded that 43 of the total 67 megawatts of Wolf Creek power available to KEPCo would be used in the KG&E service area and that the report indicated that the KG&E area would be the worst area to use Wolf Creek power. (Mulholland, TR. Vol. C-3, p. 789). Mr. Mulholland admitted that the report showed that substantial economic losses would result from use of the Wolf Creek power in the KG&E service area. (Mulholland, TR. Vol. C-3, p. 790). Mr. Mulholland testified that the 1977 study assumed that KG&E, KPL, and CTU would all incur and pass on to KEPCo increased costs from the acquisition of substantial additional generating facilities. For planning purposes, KG&E was deemed to acquire *four* nuclear power plants and an additional combustion turbine, as well as its interest in four Jeffrey units and LaCygne No. 2 by 1994. (Mulholland, TR. Vol. C-3, p. 792). Kansas Power & Light was scheduled to acquire an interest in four Jeffrey units, two nuclear units, (one in 1988 at 700 MW and one in 1992 at 900 MW) and two additional combustion turbines by 1995. (Mulholland, TR. Vol. C-3, p. 793). CTU was scheduled to acquire an interest in four Jeffrey units, an interest in four nuclear units, an interest in three combustion turbines by 1991, and an interest in a coal plant by 1993. (Mulholland, TR. Vol. C-3, p. 794). That the additional capital costs and operating and maintenance costs from all of these new generating facilities would raise the power production costs of those utilities and result in higher wholesale prices for power they sell is obvious.

14. At the time the KEPCo studies were prepared, KG&E, according to other testimony filed in this proceeding, was aware that it would not need all of the power from Wolf Creek to meet demand. It had filed reports with MOKAN showing a capacity balance above and beyond peak plus a 15 percent reserve margin of 377 megawatts upon commercial operation of Wolf Creek. However, Mr. Mulholland testified that the data used by

KEPCo consultants would not have reflected the most recent information, because:

> They [KG&E or MOKAN] were not cooperative in giving us information. We had to get it from every source, clandestine or otherwise, that we could. (TR. Vol. C-3, p. 799).

He further testified concerning the data that KEPCo consultants used:

> It was probably based on 1975 or no later than 1976 MOKAN pool load and capacity projections. We took that data because it was the best information that we had available about KG&E. (TR. Vol. C-3, p. 799).

15. In March 1979, KEPCo entered into a preliminary agreement for 17 percent ownership of the Wolf Creek Generating Station. Another feasibility study of Wolf Creek prepared by KEPCo consultants became available at that time with a similar analytic approach. Again, the issue addressed was whether costs would be higher with or without KEPCo ownership in Wolf Creek combined with the purchase of 90 MW of Southwestern Power Administration (SWPA) hydroelectric power. Economic impacts were provided assuming uniform rates for all co-op members and assuming rates which varied with the member cooperatives. (Rosen, TR. Vol. XXIII, p. 6578). In reviewing the 1979 study (Exhibit C-Staff-24), Mr. Mulholland conceded that similar assumptions were used concerning the addition of generating facilities to the KG&E system, the KPL system, and the CTU system. (Mulholland, TR. Vol. C-3, pp. 821-825). For instance, the 1979 consultant study assumed a KG&E capacity plan calling for a 136 MW interest in each of Jeffrey Units 1 through 4, a 477 MW interest in Wolf Creek, a 477 MW interest in a 1990 nuclear unit, a 110 MW interest in each of four coal units in 1987, 1989, 1993, and 1995 and a 100 MW interest in a combustion

turbine in 1994. (Mulholland, TR. Vol. C-3, p. 822-823). The 1980 study (Exhibit C-Staff-25) also assumed unrealistic capacity additions for the KG&E system (Mulholland, TR. Vol. C-3, pp. 828-829), calling for a 136 MW interest in each of the Jeffrey Units 1 through 4, a 477 MW interest in Wolf Creek, a 477 MW interest in a 1990 nuclear unit, an 85 MW interest in each of 4 coal units in 1987, 1989, 1993 and 1995, and a 75 MW interest in a combustion turbine in 1994.

16. Volume III, Section C, of the March 1977 KEPCo consultant study (Exhibit C-Staff-23) used extremely questionable assumptions regarding the capacity factors to be expected from generating facilities of investor-owned utilities thereby biasing the result in favor of Wolf Creek ownership. Mr. Mulholland testified that the capacity factor for LaCygne No. 1 was assumed to be 65 percent in 1984 and inexplicably dropped to 25 percent by 1994. For LaCygne No. 2 the capacity factor for 1984 was 9.5 percent, in 1987 it was to 2 to 3 percent and in 1990 it was 0 percent. (Mulholland, TR. Vol. C-3, pp. 801-830). Similar reductions appear in the capacity factors for the Jeffrey units. Mr. Mulholland testified that the capacity factor shown for Jeffrey 1 in 1984 was 60 percent and for 1994 was 13 percent; for Jeffrey 2 in 1984 it was 45 percent and for 1994 it was 10.5 percent; for Jeffrey 3 in 1984 it was 31 percent and for 1994 it was 5 percent. But for Wolf Creek, Mr. Mulholland conceded that the study assumed a capacity factor of 75 percent in 1984 and 80 percent in 1994. Mr. Mulholland contended that the adjustments in capacity factors reflected the real world dispatch of the units that would occur in light of excess capacity, but he did indicate that a lower capacity factor for Wolf Creek would increase the costs of the plant for both KG&E and KEPCo. (Mulholland, TR. Vol. C-3, pp. 803-808). Mr. Mulholland admitted that when production of major coal units is reduced to the extent assumed by

KEPCo consultants there appears to be excess capacity and that he didn't remember that the capacity factors used in the studies were so low. He also testified that bringing a new base load plant on line and shutting down all the other base load plants represents a sizable economic loss to the ratepayer. (Mulholland, TR. Vol. C-3, pp. 808-811).

17. The studies performed by KEPCo consultants in 1979 and 1980, Exhibits C-Staff-24 and 25, respectively, used assumptions for capacity factors that reflect significant reductions (although not as drastic as appeared in the 1977 study) for the base load coal units of each utility. The capacity factors for Wolf Creek in those years were shown to average from 73.5 to 74.8 percent. (Mulholland, TR. Vol. C-3, pp. 825-826; 838-840). Mr. Mulholland contended that even though an economic loss accrues to the ratepayer from having major base load coal facilities run at a small percentage of their available capacity, the best thing to do at that point is to minimize generating costs by backing down all other baseload plants. (Mulholland, TR. Vol. C-3, pp. 840-841). Mr. Mulholland testified that the economic loss associated with reduction of existing base load plant capacity factors should be taken into account when deciding whether to construct a baseload nuclear unit. (TR. Vol. C-3, p. 842).

18. At the request of the Rural Electrification Administration and to further evaluate the feasibility of KEPCo's participation in Wolf Creek, Mr. Mulholland specified Wolf Creek cost-related criteria in an August 24, 1981, memo which were to be met by KEPCo (Exhibit C-Staff-29). Those criteria were:

1) The KEPCo program should be in a loss situation for more than four years,

2) The maximum losses that should be sustained in any one year should not exceed one-half cent per kilowatt hour,

3) The losses during the early years of KEPCo's development should not average more than a third of a cent per kilowatt hour. (TR. Vol. C-3, p. 870).

Notwithstanding those criteria, he then indicated that (1) KEPCo currently was projecting losses for six years; (2) the maximum loss would be 2.5 cents per kwh (which Mr. Mulholland later corrected to .95 cents per kwh at page 924 of the transcript); and (3) the average losses during the early years would be 1.4 cents per kwh. (TR. Vol. C-3, p. 871-872). During cross-examination concerning several charts attached to Exhibit C-Staff-29, Mr. Mulholland testified that (1) the maximum annual economic loss to KEPCo decreases with a decreasing interest in Wolf Creek (Mulholland, TR. Vol. C-3, p. 879); (2) KEPCo could minimize its loss by owning only 15 MW of Wolf Creek (Mulholland, TR. Vol. C-3, p. 880); (3) that the charts were favorably biased by including savings from the purchase of hydropower (Mulholland, TR. Vol. C-3, p. 888); (4) that if SPA power was not incorporated in the analysis, that Wolf Creek losses would appear even more dramatic (Mulholland, TR. Vol. C-3, p. 891); and (5) that KEPCo could reduce its losses by purchasing less than 5 percent of Wolf Creek (Mulholland, TR. Vol. C-3, p. 893).

19. A series of sensitivity analyses were prepared in May 1980 by KEPCo consultants. One of the variations involved criteria which altered the annual load growth rate from four percent to two percent. (Exhibit C-Staff-34). The result of that single alteration dropped the savings anticipated by KEPCo from use of hydropower and Wolf Creek ownership by $41 million. (Mulholland, TR. Vol. C-3, p. 909). Another of the sensitivities tested was to replace Wolf Creek ownership with participation in Iatan. (Mulholland, TR. Vol. C-3, p. 911). Mr. Mulholland verified that several assumptions of questionable value were used by KEPCo consultants: (1) The opera-

tion and maintenance cost for Iatan, a coal-fired plant, was assumed to be higher than that for Wolf Creek; and (2) the studies compared 13 years of costs of operation for Wolf Creek and 16 years of costs of operation for Iatan. (Mulholland, TR. Vol. C-3, p. 911-913). The results of that study indicated a savings resulting from participation in Iatan of $133 million. (Mulholland, TR. Vol. C-3, p. 914). Another 1980 sensitivity increased the cost of Wolf Creek to $1.8 billion. That analysis resulted in a reduction of savings from Wolf Creek and hydropower to $113 million, which is less than the savings apparent if Iatan was purchased rather than Wolf Creek. (Mulholland, TR. Vol. C-3, p. 915).

20. Based upon the extensive record in the captioned dockets, the Commission finds reason to conclude with Dr. Rosen that each of the owners' Wolf Creek economic cost-benefit planning exercises were too infrequent and deficient in design and execution.

Economic Impact and Rate Comparisons

1. K.S.A. 1984 Supp. 66-128g(a)(9) requires consideration of whether resulting rates of a new facility in rate base "will have an adverse impact upon the people of Kansas." It is clear from the evidence presented that the rates resulting from total inclusion of Wolf Creek in rate base would be unreasonably high. KCPL states that a one time increase of 52 percent could be justified but has proposed a four year phase-in plan with a first year increase of $45.3 million, or 25 percent, with a cumulative increase over the base year rates of 64 percent. KG&E proposes a first year increase of $144.9 before fuel savings, a 39.4 percent increase, with a total increase over a five year phase-in period of 106 percent. Both companies have submitted the phase-in proposals in recognition of the fact that one time increases of 52 percent and 98 percent would be too large a burden on ratepayers. Numerous public witnesses in

the non-technical public hearings not only confirmed the company's opinion that a one time increase was too heavy of a burden but also revealed strong opposition to the phase-in proposals and magnitude of the proposed first year increase.

2. KCPL also presented some comparisons of its rates with Wolf Creek to national averages and the rates of KPL. Mr. Sullivan sponsored Exhibit G-KCPL-52 which contained the relevant information. That exhibit reflects the fact that at least until the 1990's, KCPL rates will be more than the national average and KPL rates. After that period, it is difficult to make any conclusions since Mr. Sullivan's data assumes continued increases in KPL and national average rates while assuming level of declining KCPL rates due to declining rate base and increased sales. These rate comparison charts also confirm the observations of staff witness Rosen and other witnesses that the economic disadvantages caused by Wolf Creek are greatest in the early portions of its service life and that as the plant's high capital costs are depreciated, it becomes a relatively more economic source of energy.

3. Mr. Branca, of KCPL, also testified on KCPL's ability to sell on the competitive wholesale or other market the energy from Wolf Creek. He concluded that Wolf Creek would lower the system's average incremental costs, making KCPL more competitive for interexchange transactions. However, he conceded that his conclusions did not apply to wholesale transactions which are priced on a fully allocated cost basis such as firm power and "capacity type" transactions. (TR. Vol. XII, pp. 3305-06).

4. KCPL also presented the testimony of Dr. Daicoff. His testimony, assessing the economic impact of KCPL's proposed rate increase as minimal, is less than persuasive. Dr. Daicoff's analysis and surveys appear incom-

plete and inconsistent. Dr. Daicoff's study does not specifically consider the economic impact of the 52 percent increase in charges for electric service proposed by KCPL or the short-term impact of KCPL's phase-in proposal. (TR. Vol. XVI, pp. 4710-4712).

5. Dr. Tolley, on behalf of the Johnson County Joint Intervenors, presented an economic analysis of the effect of KCPL's proposed rate increase. Dr. Tolley's work is convincing that KCPL's rate proposals would have some adverse economic impact, although the effect on employment does not appear great. According to Dr. Tolley, KCPL's proposal would result in less sales, increased unemployment, reduced incomes, higher government costs and loss of tax revenues. (TR. Vol. A-6, corrected p. 1284). Existing businesses would encounter higher costs and reduced output and may be forced to relocate. Furthermore, new businesses will be discouraged from locating in KCPL's service area. (TR. Vol. A-6, pp. 1274, 1284).

6. Mr. Russell also testified on behalf of the Johnson County Intervenors concerning KCPL's attempts to sell firm power or participation to five potential buyers. He concludes about the efforts to consumate such transactions that they reflect KCPL's recognition of its excess capacity for the next ten years and reveal the non-competitiveness of KCPL's fully allocated power costs. (TR. Vol. A-7, p. 1656).

7. James Cobler also presented testimony on behalf of the intervenor Attorney General of Kansas concerning the financial impact of the proposed rate increase upon agencies of the State of Kansas, which ultimately fall upon the citizens of Kansas. As noted above, the transcripts from public hearings conducted throughout the KCPL service area are replete with testimony concerning the adverse economic consequences of a substantial increase in charges for electric service. The Commission believes the evidence clearly shows that inclusion of the

entire investment in Wolf Creek in the rate base of KCPL would have some adverse economic impact upon the people of Kansas, whether they be residential, commercial or industrial users.

Risk Assumption and Sharing

1. Before turning to the third set of factors concerning risks accepted by the applicant, we should review the testimony concerning the proper role of regulation in determining rates. Dr. Sturgeon on behalf of the Electric Shock Coalition, testified that:

> . . . one of the goals of public utility regulation is to create the same results within the regulated industry as would occur in a competitive market. In a competitive market, if a firm does not use the efficient alternatives, it must either exit the market or receive a lower than normal return. (TR. Vol. XXVI, p. 1646).

2. Dr. Rosen, in his testimony on risk sharing also discussed ways in which regulation can take the place of competition in the instant context. He stated that "in theory the discipline of the market helps ensure that investment decisions are made judiciously in the competitive market." (TR. Vol. XXXIII, p. 6714). Dr. Rosen also observed that for the regulated electric utility industry there are two principle means of achieving this effect. The first is an on-going process of critical review of utility planning with some state regulatory commissions holding long range planning hearings on a regular basis. The second process involves regulatory actions which provide incentives and disincentives. For example, requiring utilities to bear some of the costs of excess and costly new capacity encourages management to engage in more careful and critical planning.

3. Applicants, through witnesses Phillips and Fitzpatrick, argue that public utilities cannot be judged with

the same standards as might be appropriate for unregulated businesses. (Phillips, TR. Vol. XXVII, pp. 7616-18; Fitzpatrick, TR. Vol. XXVII, pp. 8052-53). Public utilities have an obligation, unlike non-regulated firms, to serve present and future demand and, concurrently, have revenue requirements based on actual costs. Applicant argues that because of the long period of time over which investments are made, there are increased risks for electric utilities for which the regulatory process has traditionally afforded surety.

4. The Commission cannot embrace totally the views that regulation should produce the same results as the competitive market place. As applicants observe, there are significant distinctions between the obligations of regulated and non-regulated firms. However, we agree with Dr. Rosen and other parties witnesses that regulation must provide a mechanism which encourages good management planning. A comparison with the free market model in this light is of some value and is consistent with legislative directions to compare rates resulting from capacity additions with other utilities' rates.

5. We believe, moreover, that the "risk-sharing" approach advocated by Dr. Rosen has considerable merit. This is especially true in this complex case with much conflicting evidence. The Commission finds of particular relevance Dr. Rosen's testimony on evaluation of planning prudence:

> Q. In evaluating the planning process, it is not difficult to distinguish between imprudence and just poor planning?
>
> A. Yes, it is. This is one reason why I believe that there is a need for clear, equitable, and strong risk sharing policies to be established by regulatory commissions to be able to deal with the consequences of poor planning, even if no imprudence is demonstrated. The standard for

imprudence in investments is generally quite restrictive, referring to losses which were sustained due to negligence, wastefulness, or dishonesty. In some cases, utilities periodically did the correct type of study, yet the assumptions or methods used were so unrealistic that the resultant management investment decisions were so unreasonable that they may have bordered on negligent. Another source of potential imprudence would be grossly insufficient study or project review altogether.

Q. How, then, would a regulatory agency use the six criteria that you have elaborated above to decide upon a precise sharing of excess costs?

A. One cannot be completely precise in these matters. Sometimes public utility commissions have decided that, short of any outstanding consideration, a 50/50 sharing between ratepayers and stockholders of the amount under dispute is appropriate, but other proportional splits have been adopted. Sometimes a return *of* an investment is granted (depreciation or amortization), but not a return *on* the investment (it is not included in rate base). I believe it is reasonable to say that significant deviations from a 50/50 sharing formula relative to total expected economic losses should be justified. For instance, stockholders might be required to bear a greater proportion of the burdens if the company planning process that led to the losses was particularly poor, or if company decisions did not seem continually sensitive to the need to keep rates as low as possible.

(Rosen, Tr. Vol. XXIII, pp. 6718-20).

6. With reference to risk sharing, the Legislature has also explicitly instructed the Commission to examine

"whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest to Kansas." K.S.A. 1984 Supp. 66-128 (a)(11). The Commission believes that the applicants have, in fact, accepted enormous risks in connection with the Wolf Creek project. As observed by Dr. Rosen:

> Constructing a large new facility involves numerous risks. First, capital cost estimates for baseload units have consistently proved to be low. Second, achieving fuel savings sufficient to offset high capital cost requires that baseload units be operated a substantial portion of the year. Finally, if load growth and fuel price projections prove to be inaccurate, a costly baseload facility may not realize the benefits for which it was originally planned.
>
> All of the factors I just mentioned are particularly applicable to nuclear units because of their long construction periods, large unit size, and unexpectedly poor operating performance and high operating costs. (TR. Vol. XXIII, p. 6721).

The estimated costs of the plant have grown from the original 1973 estimate of $525 million to the "Definitive Estimate" of $1.033 billion in December of 1976 to the latest official July 1984 estimate of $2.904 billion or over $2600/KW. The actual final cost will likely be over $3 billion. Since the November 1981 estimate of $1.952 billion, the costs have increased more than $900 per kilowatt. As discussed by several witnesses, during this time of increasing cost estimates for completion, the growth in demand forecasted was also decreasing while the economics of coal fired generation began to look more favorable. The unfavorable picture became, of course, even gloomier when KEPCo reduced its ownership share and attempts to sell participation or energy to other utilities failed. The applicant despite these trends did not appear to seriously consider the possibility of cancellation.

7. Indeed, KG&E management and stockholders positively affirmed the decision to continue the project on two occasions in the face of serious concerns by some stockholders. Exhibit G-Staff-36, the May 21, 1980 Notice of Annual Meeting of Shareholders contained the following shareholder proposal:

> STOCKHOLDER PROPOSAL NO. 1 to be presented at the annual meeting of stockholders of the Kansas Gas and Electric Company, May 21, 1980.
>
> We recommend to the Board of Directors that construction of the Wolf Creek Unit No. 1 nuclear power plant near Burlington, Kansas be stopped.
>
> STATEMENT IN SUPPORT OF THE PROPOSAL:
>
> In our opinion, undue burdens on the stockholders are presented by these financial uncertainties:
>
> a) accidents such as Three Mile Island has experienced,
>
> b) as yet unknown safety requirements that will be imposed by the Nuclear Regulatory Commission,
>
> c) cost overruns and construction occasioned by faulty work may not be allowed as part of the rate base and might have to be borne by stockholders,
>
> d) rising costs of repairs,
>
> e) cost and availability of nuclear fuel, and
>
> f) cost of decommissioning the plant.
>
> We agree with the Company that operating in a socially responsible way is important. Are we socially responsible if we continue constructing a nuclear plant which, in our opinion, will:
>
> a) possibly double the cost per unit of electricity,

b) expose workers during its operation, repair, and decommissioning to above normal radiation with its attendant increased risks of cancer and genetic damage,

c) use larger quantities of water having first priority over community needs even in times of drought,-

d) emit radiation over neighboring farms which can enter plants and animals, become part of the food chain, and increase risks to the health of this and future generations, and

e) create thousands of cubic feet of radioactive waste when we do not know how to transport or store it safely?

Exhibit G-Staff-38, the May 27, 1981 Notice of Annual Meeting, contained a similar shareholder proposal:

> STOCKHOLDER PROPOSAL NO. 3.a to be presented at the annual meeting of stockholders of the Kansas Gas and Electric Company, May 27, 1981.
>
> We recommend to the Board of Directors that construction of the Wolf Creek Unit No. 1 nuclear power plant near Burlington, Kansas be stopped.
>
> 1. The cost of construction continues to mushroom from the projections first given stockholders. The Cresap, McCormack & Paget report, commissioned by the Kansas Corporation Commission, states that safety-related regulatory and licensing requirements will effectively triple the costs (from 1973) in plants loading fuel in 1986.
>
> If the sale of 17% of Wolf Creek to Kansas Electric Power Cooperatives is not successful, it is unlikely that, KG&E will be able to generate its share of the 1.1 billion dol-

lars needed to complete Wolf Creek. If KEPCo does buy and is only liable for costs up to 1.5 billion instead of the projected 1.7 billion dollars, this will put an unfair burden on other stockholders.

2. The Investor Responsibility Research Center, Inc. has stated that the ability of other Kansas utilities to contract for cheap Wyoming coal may place power from Wolf Creek at a competitive disadvantage once the plant is completed, if construction, operation, or fuel costs, rise considerably. In our opinion, this will, in all probability, be the case with Wolf Creek.

3. The need for Wolf Creek can be obviated, according to many authorities, by promoting all possible conservation efforts.

STATEMENT IN SUPPORT OF THE PROPOSAL:

1. It is imperative that Kansas citizens be protected from any build-up of radioactive fission products in the environment where they can become concentrated in the food chain. The cost of safely containing Wolf Creek's low level radioactive waste and approximately 30 metric tons per year of spent fuel (high level radioactivity) on the site or of transporting it in safe and guarded shipments to Federal repositories in other parts of the country, will greatly increase the cost of the fuel cycle.

2. Uranium ore supplies are limited and uranium 235 fuel will rise in cost as easily accessible supplies near depletion.

3. Although $400,000,000.00 has been calculated into Wolf Creek's total construction cost for decommissioning, Metropolitan Edison has esti-

mated that it will cost $1,000,000,000.00 (1 billion dollars) and five years to decommission their Three Mile Island reactor.

4. According to the Energy Project at the Harvard Business School (1979), the United States with a serious commitment to conservation, might well consume 30 to 40% less energy than it does now. This was born out by a program in Los Angeles, initiated after the Arab Oil embargo went into effect. Total electrical usage dropped by 17% in one year.

8. In response to both shareholders proposals the company's Board of Directors stated that the decision to build Wolf Creek was sound, the sunk investment was large and would be wasted, and without Wolf Creek, the company would be unable to meet demand for electricity by the late 1980s. Mr. Cadman, under cross-examination by staff, conceded that the decision to continue construction was based more on concerns about fuel availability than on the need for capacity. Of the voting shares, 82.7 percent cast votes against the 1980 shareholder proposal and 75.8 percent against the 1981 proposal to halt construction.

9. The Commission believes that it is reasonable to assume that the facts and circumstances giving rise to the concerns expressed by the KG&E shareholders were available and known or should have been known to KCPL and its shareholders also. Despite these changing conditions, KCPL continued construction of WCGS through its partner, KG&E.

C. *FINDINGS AND CONCLUSIONS*

1. After careful consideration of the above facts and the entire record, the Commission concludes that the portion of Wolf Creek which is used and required to be used is an extraordinarily expensive means of providing

base load capacity which could have been provided at a more reasonable cost. The rates resulting from full rate base treatment of Wolf Creek would be unreasonably high for ratepayers to pay and unreasonably high compared to other electric utility rates in Kansas. Imposition of such rates would have a detrimental impact on ratepayers and the general economics of the state. Although the lower fuel and operating costs of a nuclear plant may ultimately result in favorable rates, this would not occur until some time in the future. The decision to continue construction of Wolf Creek, especially after 1981, was not based on adequate or realistic analysis and review and appears to have stemmed from institutional inertia. Certainly by the end of 1981, applicants should have been acutely aware that the capital costs of Wolf Creek were becoming unreasonably high and that the overall economic benefits were subject to serious question. Faced with changing economics of the benefits of Wolf Creek, the applicant and its shareholders continued to assume the risks involved in a project of such magnitude. We believe in light of these facts that simple exclusion of the physical excess capacity of Wolf Creek would still result in an unreasonable valuation of property in rate base.

2. One of our considerations deserves further comment. Even under the best of circumstances, a high priced capital addition to rate base such as a generating facility causes some inequities among various generations of ratepayers. As mentioned previously, the overall benefits to ratepayers of such a facility increase over time as the capital costs decrease through accrued depreciation. Even if these are overall economic savings or benefits over the life of the plant, those benefits may never be felt or realized by the earlier generations who pay for the higher capital costs at the beginning of the plant's life. This intergenerational inequity occurs to some extent relative to each item of investment included

in a utility's rate base, but normally the overall effect is moderated by the mixture of plant in rate base at various stages of economic life. In the instant case, however, Wolf Creek investment would dominant the plant-in-service rate base account of the applicant, so that such inequity would not be effectively offset. Also, in the instant case, of course, are serious questions of whether there would be an overall benefit over the life of Wolf Creek. For both reasons serious intergenerational inequities would result without further adjustments.

3. The Commission has reviewed with interest the examples of other state commissions' actions cited in witnesses' testimony and the parties briefs with regard to excess capacity and risk sharing. We would also note the Kansas case of *Kansas Power & Light Co. v. Kansas Corporation Commission*, 619 P.2d 320, 5 Kan. App 2d 514 (1981). In that case, the Court of Appeals determined that the benefits of capital gains resulting from the sale of an office building should not accrue solely to the shareholders of the company. Although capital gains warrant different considerations than economic losses associated with an excessively expensive generation facility, that case appears to recognize the principle that equitable division of economic consequences between shareholders and ratepayers is appropriate. Other states have taken action above a fixed reserve margin to a limitation of the capital costs of a facility. These excessive costs have been totally excluded or have been shared between ratepayers and shareholders by adjustments to return. We believe that a combination of approaches is warranted in this case. In view of the fact that the decision to construct and build Wolf Creek was not supported by a need for physical capacity, a physical excess capacity adjustment is undeniably appropriate. In addition, the exorbitant capital costs of Wolf Creek must be addressed by some type of adjustment. Although evidence was presented, primarily by Dr. Rosen and Dr.

Komanoff, that at some point the Wolf Creek project should have been cancelled, we cannot conclude with the absolute certainty which we believe is necessary that such conclusion would necessarily have been made. If such were the case, a total exclusion of excessive capital costs from rate base would be warranted. We believe instead that no return should be allowed on that portion of Wolf Creek which is not used and required to be used and represents unreasonably high capital costs. By allowing a return of the costs through depreciation but no return on the costs, we are dividing the economic consequence between ratepayers and shareholders in an equitable manner.

4. We are not basing this decision on a "prudence determination." Although substantial evidence has been presented that the excessive costs of Wolf Creek are the consequence of imprudent decisions and actions of the applicant, we do not make such a finding today. We do believe that KCPL has not performed adequately throughout much of the period during which Wolf Creek has been built, and that more rigorous reviews of likely consequences and alternatives may have avoided the exorbitant costs associated with Wolf Creek. We do find that substantial risks were involved in the Wolf Creek project and a significant portion of the economic consequences should be shared by the company.

5. As noted previously, applicant contends that while the Commission is free to choose among several valuation methodologies, the methodology chosen should be uniformly applied to all of the utility's property. The Commission disagrees. First, we note that the statutory provisions enacted by H.B. 2927, particularly those in K.S.A. 1984 Supp. 66-128g, appear to be directed primarily at new additions to electric generating capacity. The Commission in this proceeding is determining the value of such an addition to applicant's system. It has in the past already determined the reasonable value of other

assets which were determined to be used or required to be used and included them in rate base accordingly. No evidence has been presented in this proceeding that the reasonable value of such other facilities is greater than such historical original costs. Furthermore, the Commission would be most reluctant to determine that when the "economic" value of an asset increases above its historical book value, the asset should be revalued for ratemaking purposes. If, as occurs in the unregulated industries, the utility assumed all risks that the "value" of a facility was less than historical costs, it might be appropriate for the rewards associated with a greater value to accrue to the utility. The approach taken today, however, is a far cry from imposing the excessive costs of Wolf Creek totally on the company. The shareholders will recover almost all the costs of Wolf Creek through depreciation; they will smiply not earn as great a reward through return as they would if the reasonable value of Wolf Creek were equal to its historical value. The other assets already included in rate base at original cost have, of course, already received a return which did not include any risk sharing. With regard to the Wolf Creek plant excluded today, its value may increase with changes in the comparative economics of coal generating facilities. If, for example, coal transportation costs escalate or "acid rain" concerns cause increased costs for coal generation facilities in the future, the figure adopted today could increase. Absent very compelling evidence, however, we cannot envision that value as being greater than the historical costs. Furthermore, the Commission is inclined to believe that that valuation of plant included in rate base should not change over time although that need not be addressed today.

6. With regard to the potential increases in the value of Wolf Creek due to its economic comparison with coal facilities, the Commission would make a few additional observations. We do not, of course, intend by estab-

lishment of this standard to create incentives for utilities to operate their coal plants in a less efficient manner. Any changes in operational characteristics will be subjected to close scrutiny. Indeed, as noted in another portion of this order, we are encouraging the utilities to improve efficiencies of their systems. Some parties have suggested system problems, such as minimum loading constraints, are created or exacerbated by the addition of Wolf Creek and have proposed various remedies. One such possibility is the creation of an ongoing performance standard program with both incentives and disincentives, especially with regard to fuel savings to be passed on to ratepayers through the Energy Cost Adjustment (ECA) clause. The Commission believes that such programs are worth exploring and intends to do so.

7. The Commission's failure to adopt today any of the proposals should not be misconstrued as lack of concern about the alleged problems with the applicant's system configuration and operations. In fact, the Commission is inclined to agree that the applicant's system has not only too much capacity but also too much base load capacity which causes system inefficiencies such as the minimum load constraints discussed by a number of witnesses. Although this has been somewhat considered in our decision today, no additional adjustments have been made. The Commission does not believe that there is sufficient evidence on the quantification of economic inefficiencies or appropriate remedies to take further action at this time. There was also specific testimony on the need to revise the various standards in the current Energy Cost Adjustment (ECA) clause as a result of the operation of the Wolf Creek Generating Station. Those standards relating to line loss limits, thermal efficiency and fuel mix in the ECA clause potentially need adjustment but we do not believe there was sufficient evidence to make determinations at this time. We consequently intend to treat ECA tariffs filed in com-

pliance with this order as temporary and to set the matter for hearing at a later date.

8. In determining the proper valuation for capital costs, the Commission has concluded that the proper value is what a coal-fired plant meeting the applicant's needs would have cost. We believe that capital costs above this benchmark were part of the risks accepted by shareholders. There is a wide range of such costs in the record. We will mention a few.

9. Witness Komanoff's testimony contained a variety of figures for a coal plant including $639/Kw for the estimated completion of JEC 4 in 1983 dollars (TR. Vol. XXXIV, p. 9980); $816/Kw from a 1980 estimate for JEC 4 completion in spring of 1986 (*Ibid*, 10155-10156); and $900-$950/Kw for an expensive coal plant with scrubbers in 1982 direct construction costs (*Ibid*, 10215).

10. Dr. Rosen, in his analysis, assumed the costs of $1,983/Kw for a 265 Mw unit on line in 1989 and $1,770/KW for a second unit in 1993 with a 6 percent rate of inflation. (TR. Vol. XXIII, p. 6663). If brought down to 1985 present value, these costs would be around $1,570/Kw and $1,110/Kw respectively. A larger coal plant with better economies of scale would, of course, be expected to result in lower costs.

11. Mr. Roen testified in regard to Exhibit G-Staff-29, a Bus Bar study done in 1981 by Mr. Lucas of KGE. A referenced 680 megawatt coal unit for completion in 1984 was assumed to cost $800 to $1,200 per megwatt pursuant to a study performed by Gilbert Commonwealth on behalf of MOKAN in 1980 and 1981. (TR. Vol. VII, p. 1772-1773). One of the reasons for the wide range was allowance for environmental control devices. The other annual studies performed by KGE contained in Exhibits G-Staff 24-28 all assumed a lower cost for a coal plant, of course, ranging from $570/Kw in 1975 to $850/Kw in the 1980 study.

12. Mr. Doyle, in his testimony, referred to a Black & Veatch study performed for KCPL. That report indicated a 650-700 megawatt coal plant for completion in 1985 to comply with environmental laws would cost $1,120 per kilowatt. (TR. Vol. XIII, p. 3585-3587).

13. Mr. Ferraro, sponsoring portions of the CMP report, Exhibit G-KGE-21, noted the United Engineers and Constructors (UEOC) studies reflected on Exhibit IV-5 of the CMP report. A 1975 study estimated the cost of a 1,000 MW coal-fired plant commencing operation in January 1985 as $750/Kw.

14. In contrast to the above historical estimates, there is the actual experience of coal fired plants recently operational in Kansas. The Holcomb plant, owned by Sunflower Electric Cooperative cost approximately $1500 per kilowatt and is considered a relatively expensive plant. The third unit of Jeffrey Energy Center, considered an unusually successful construction project by at least one witness (Komanoff, TR. Vol. XXXIV, 10158) cost less than $600/Kw.

15. The Commission has concluded that a reasonable value for Wolf Creek capacity should reflect both the cost estimates for a coal plant which were prevalent during the construction of Wolf Creek and the actual experience of recent facilities. There is, of course, no precise manner for determining the proper value. We believe, however, that $1150 to $1250/Kw represents a reasonable range for an appropriate value. This is substantially more than most of the estimates used in the owners' planning studies and the JEC Unit 3 cost which did not require pollution control devices. It is of course less than the Holcomb per kilowatt cost, however, Holcomb did not benefit from the economies a larger unit would produce.

16. It is of some worth to compare this $1150-$1250/Kw range with the increases in costs which have oc-

curred for Wolf Creek construction beginning with the November 1981 estimate which should have given the owners serious concerns about the continued economics of Wolf Creek. From the proper estimate of $1.687 billion the costs have increased over $1.3 billion or over $1180/Kw. Also of some interest for comparison purposes is the figure of $1490 per Kw which owners' witness Fairchild stated was the incremental cost of increasing the size of Wolf Creek from 800 Mw to 1150 Mw, based on a total plant cost of $2.9 billion (TR. Vol. XXXII, p. 9632-33).

17. In evaluating the appropriate capital cost to be imputed to Wolf Creek, we also need to consider the lower operating costs of Wolf Creek in comparison to coal plants. There are, of course, a variety of plant comparisons which could be made. We have examined the generation costs of Wolf Creek, including the decommissioning costs we have adopted today, as compared to various coal facilities on the KGE and KCPL systems. Schedules RAR 4.1 and 4.3 of Exhibit G-Staff-127 set out the generation costs associated with the coal plants which provided electricity in 1984 ofr KG&E and KCPL. These costs range from 1.5¢Kwh for the Iatan unit to 3.1¢/Kwh for the Hawthorn units. The LaCygne units, jointly owned by the companies, showed costs in 1984 of 2.3¢/Kwh for Unit 1 and 1.7¢/Kwh for Unit 2. The respective average coal costs for the companies are 1.90¢/Kwh for KGE and 2.00¢/Kwh for KCPL.

18. These costs may be used to determine the savings which might be expected from Wolf Creek over a coal facility by taking the difference per Kwh with Wolf Creek's estimated generation cost, approximately 1.58¢/Kwh. (See KGE Application, Section 8, Schedule 4). Assuming the capacity factor anticipated by the operating partner for Wolf Creek of 61 percent (Lucas, TR. Vol. XII, p. 3105, 3126) a considerable range of savings result. For example, LaCygne 1 generating costs of 2.3¢/

Kwh compared to Wolf Creek results in an annual generation savings of $43,600,000. However, the LaCygne 2 comparison would show a savings of only slightly more than $7,200,000. When these generating cost savings are translated into capital costs, the range of approximately $174/Kw to $29/KW results. Use of the average coal plant costs for the two companies results in a savings in a range from $19,340,000 to $25,400,000. The respective company average coal plant cost figure comparisons result in a a range of $77/Kw to $102/Kw capital cost figure. We believe this range is most appropriate for our purposes here. We recognized that using the average coal generating costs does not correspond precisely with the fact that we have allowed a capital cost for current vintage coal plants which have lower generation costs. Such a more precise analysis would, of course, show less savings for Wolf Creek. However, for purposes of this case, we believe that a rough reflection of the generation costs being displaced by Wolf Creek is appropriate. A figure toward the lower end of the range would, however, be appropriate to compensate for the inclusion of older vintage plant generation figures. We also note that the generation costs for Wolf Creek do not include any reflection of future capital additions. The appropriate estimate for such costs was hotly disputed, but inclusion of any costs would, of course, reduce the relative value of the plant.

19. The combination of the $1150-$1250/Kw range for reasonable costs of coal plants combined with the $77Kw to $102/Kw range for reflection of generation cost savings results in a total range of $1227 to $1352/Kw as a reasonable value for a comparable coal plant. We believe that the midpoint of this range of $1,290/Kw is reasonable in this case as a value for Wolf Creek for which a return should be allowed.

20. The Commission recognizes that this valuation of Wolf Creek has necessarily been judgmental. As noted in

applicants' briefs, however, "the determination of whether a plant is 'required to be used', 'useful' or 'reasonably necessary' is not susceptible to a simple cookbook approach." (KCPL Brief, p. 19; KGE Brief p. C-9). Applicants have urged that reliance solely on comparative economics or physical reserve margin would improperly narrow the application of the "used and required to be used" standard, and have urged primary consideration of management prudence. The Commission, as set forth above, has considered all three factors and believes that this decision reflects the appropriate valuation of that portion of Wolf Creek which is used and required to be used.

21. K.S.A. 1984 Supp. 66-128e provides in part that:

> In the event the commission finds that a portion of the costs were attributable either to investment in excess capacity which were incurred due to lack of prudence in facility planning or were incurred due to lack of prudence in plant acquisition, construction or operation, the commission shall exclude that portion of the carrying of finance charges incurred after the date of its findings, and no part of the carrying or finance costs excluded shall ever be or become part of the reasonable value of public utility property so used and required to be used.

22. As stated above, the Commission is not basing its decision today on a finding of imprudence except for the exclusion regarding unreasonable increases in construction costs. The Commission, therefore, is not required to exclude permanently the "carrying and finance charges" associated with physical and economic excess capacity adjustments we make today, although we have the discretion to do so under K.S.A. 1984 Supp. 66-128b. That statute provides as follows:

> The commission may require a public utility to defer inclusion of all or any portion of the reasonable value

of property determined not currently used and required to be used and may require the phase-in of such value over any period of time and in such increments as it determines to be appropriate. If the commission requires a public utility to defer the inclusion of any portion of such reasonable value and orders a phase-in of such value, it may exclude any or all of the carrying or finance costs incurred after the date of its determination and throughout the period of any deferral or phase-in as so ordered.

23. Under the decisions we make today, all of Wolf Creek, except for that portion resulting from construction cost overruns and schedule delays, will be subject to recovery by depreciation expense. The physical and economic excess capacity exclusions are, however, ineligible for a return on investment. Consequently, those amounts are today not fully included in rate base. Although those exclusions may well someday be fully in rate base, we are unable to project when that will occur. Therefore, we must decide on a reasonable treatment of the carrying costs for the excluded amounts.

24. We find that some carrying costs associated with the debt and preferred stock costs of capital should be accrued. Such carrying costs, however, should only be those associated with the portion of Wolf Creek excluded on a physical excess capacity basis valued at the same economic value as the portion included in rate base. This amount should be capitalized by applicant at the overall weighted cost of debt and preferred stock and recorded on a net-of-tax basis as a debit to FERC Account 186, Miscellaneous Deferred Debits and a credit to Account 421, Other Income and Deductions. Amortization of this amount for ratemaking purposes will commence with the Commission's final order determining permanent rates associated with Wolf Creek. The amortization period shall be over the then remaining life of the Wolf

Creek plant on a straight line basis. No interest compounding shall be allowed on the balance in the deferral account. Changes made by the Commission in the future on the amount of Wolf Creek which is excluded will, of course, result in a prospective modification of the deferral calculations and amounts.

VII. DECOMMISSIONING

A. *INTRODUCTION*

1. Of all the issues in this important rate case, one of the most unique and most vexing is the issue of decommissioning. Decommissioning of a nuclear power plant is the removal of contaminant radioactive material down to residue levels considered acceptable for permitting unrestricted use of the plant and its site. While the regulation of activities related to decommissioning of nuclear power plants has traditionally been within the purview of the Nuclear Regulatory Commission (NRC), the actual collection of decommissioning funds by a related utility is accomplished through financial arrangements subject to approval by a utility regulatory commission.

2. Pursuant to the requirements of House Bill 2927, the Commission must determine whether a utility having an ownership interest in the Wolf Creek Nuclear Power Plant has provided a method to assure that the cost of any decommissioning of the facility will be paid for by the utility. Three issues must be addressed by the Commission:

(1) the alternatives available for physical decommissioning of the facility;

(2) the total estimated cost of decommissioning the facility; and

(3) the appropriate method of collecting funds for ultimate use in decommissioning the facility.

B. *PHYSICAL DECOMMISSIONING*

1. Under present technology, there are five basic alternatives for decommissioning nuclear facilities:

(a) mothballing

(b) entombment—with delayed dismantling

(c) DECON—immediate dismantling

(d) SAFESTOR—mothballed/delayed dismantling

(e) ENTOMB—entombment/delayed dismantling

2. Both Neil Talbot, staff witness, and Thomas La Guardia, witness for the partner applicants, recommended the DECON alternative as being the current, state-of-the-art alternative. No witness disputed this testimony. We have no difficulty in approving the DECON method of decommissioning at this time, subject to future modification as events and technology dictate.

C. *COST*

1. Both Messrs. LaGuardia and Talbot have suggested total estimated cost figures to be used as an assumption for revenue requirement purposes. Mr. LaGuardia did a site specific study tailored specifically for Wolf Creek. He is regarded as an eminent authority in the field, having been directly involved in the decommissioning of BONUS and Elk River reactors, having co-authored the U.S. Department of Energy's "Decommissioning Handbook" and having prepared numerous site-specific decommissioning cost estimates. (LaGuardia, TR. V. p. 1079). Mr. LaGuardia estimated cost figures are based on a 40-year life of plant, are in constant 1983 dollars, do not include inflation and include a 25 percent contingency factor. (Ibid.). Both Mr. LaGuardia and Mr. Talbot proposed a regular, periodic review of the total estimated decommissioning costs.

2. Staff witness Talbot disagreed sharply with Mr. LaGuardia's estimated decommissioning costs. Mr. Talbot is not a recognized authority in the field and did not do a site-specific study. Mr. Talbot emphasized trends over time in the decommissioning area and reviewed the wide range of uncertainties involved, the fluctuating range of cost estimates and the consistent tendency of industry cost estimates to rise over time. Mr. Talbot concluded that 300 million dollars (in 1983 dollars) was a more realistic cost estimate. On questioning from the bench during his rebuttal testimony, Mr. LaGuardia updated his 1983 estimates to 1985 dollars and indicated ". . . it would certainly be higher . . . 130, 140, 150 million is possible." (TR. Vol. XXX, p. 8956).

3. The evidence is clear that decommissioning cost estimates are inherently uncertain and speculative. Mr. Talbot's testimony graphically outlined the historical escalation in cost estimates. To date, there has been no actual experience decommissioning a large, commercial nuclear plant and cost estimates have traditionally been low. Also, the current shortage (indeed non-existence) of the sites for the disposal of large quantities of radioactive waste makes detailed estimates of shipping distance and cost virtually impossible.

4. On the other hand, Mr. LaGuardia's study was tailored specifically to Wolf Creek in that it utilized Wolf Creek design and elevation drawings and plant description. The different plant characteristics of nuclear units are such that a site-specific study is clearly of more value than general trend observations, however valid.

5. We believe the most realistic cost estimate, at this point, to be the mid-point of Mr. LaGuardia's updated estimate—$140 million.

D. *LIFE OF PLANT*

Although there was conflicting testimony on the estimated life of the plant, we believe that the NRC and

general industry estimates of 30 years is a valid and realistic life to utilize for purposes of decommissioning estimates.

E. *FUNDING OF DECOMMISSIONING*

1. The Nuclear Regulatory Commission has identified six major alternatives available to utilities for funding decommissioning. These can be divided into two groups: plant specific approaches and pooled approaches. At this time, no pooled approaches are available to companies. Examples of pooled approaches include surety bonds, decommissioning insurance and funding for general tax revenues.

2. Of the plant specific approaches, there are three basic alternatives for funding decommissioning: prepayment, contributions to an external trust during the life of the plant and contributions retained by the companies in internal reserves. The plant specific approaches are identified as:

(a) prepaid plan

(b) external trust fund,

(c) unsegregated internal fund,

(d) segregated internal fund.

Staff has proposed the external fund method be employed by all the Wolf Creek partners.

3. The NRC has suggested five criteria for evaluating alternative financing mechanisms for nuclear decommissioning:

(a) degree of assurance that the funds will actually be available at the time of decommissioning;

(b) cost;

(c) intergenerational equity—that the cost of decommissioning be spread equitably to all ratepayers throughout the life of the facility;

(d) flexibility—responsiveness to changes in the basic assumptions;

(e) adaptability—ability of the plan to adapt to different ownership and jurisdictional arrangements. See Wood, "Assuring the Availability of Funds for Decommissioning Nuclear Facilities," NRC Report, March, 1983.

4. In determining the appropriate funding mechanism to be employed, the testimony of the witnesses must be viewed in the context of the NRC criteria.

5. Applicant KCPL is, therefore, ordered to file tariffs to begin collecting its proportionate share of $140 million over a time frame of 30 years to be utilized for the purpose of physical decommissioning of Wolf Creek Generating Station.

6. KCPL, through its witness James K. Liberda, proposed an unsegregated internal funding mechanism. (Liberda, XII TR. p. 33651). Mr. Liberda testified that KCPL proposed to utilize a negative net salvage approach. According to Mr. Liberda, under the KCPL plan, the book depreciation charges are increased by a provision for decommissioning. The additional revenues resulting from this adjustment are used internally by the company. The use of internally generated funds reduces the need to raise externally supplied capital and thus saves financing costs. When the time for decommissioning comes, the company would use internally generated and borrowed funds to cover the actual cost of decommissioning. Mr. Liberda further testified that the negative net salvage method provides a reasonable degree of assurance that funds will be available for decommissioning at the time they are necessary.

7. Staff witness Talbot pointed out that the previously referenced NRC study found that the most important criteria were assurance, cost and equity. Mr. Talbot recommended that the external funding mechanism be

ordered for all the Wolf Creek partners. (Talbot, TR. XXII, p. 7347). Mr. Talbot also pointed out that that it is inevitable that a certain amount of trade-offs between the criteria be considered. For example, the first trade-off is between the concepts of intergenerational equity and assurance. While the pre-payment method gives a greater assurance of availability, the general view is to prefer spreading the collection over the expected life of the plant. (Talbot, ibid).

8. Ordinarily the external method, while providing the greater degree of assurance, would cost more than the internal method. This is because of the combination of the lower rate of return earned on the investments of the trust and the fact that the return is taxed, compared with the higher return earned on an unsegregated internal trust which is the avoided cost of capital to the utility company itself. However, in this regard, the testimony of KG&E witness Thomas Gayoso is instructive. Mr. Gayoso testified that after performing an in-depth study of the different alternatives, he was of the opinion that an external fund is the most viable alternative because it represents the best balance between risk and cost. Mr. Gayoso testified that the cost advantage to the internal method had been diminished because of recent developments affecting the income tax deductability of decommissioning accruals and that this was a crucial factor in KG&E's choice.

9. According to Mr. Gayoso, the Deficit Reduction Act of 1984 establishes special rules for nuclear decommissioning cost treatment. In general, the special rules allow as a deduction for any taxable year payments made to an external fund, subject to certain limitations. These new developments and other factors listed in his testimony persuaded Mr. Gayoso to recommend an external fund for KG&E.

10. KG&E's internal funding mechanism emphasizes the criteria of cost savings and flexibility over both as-

surance and equity. Moreover, Mr. Liberda's testimony regarding cost savings is subject in light of the tax savings possibilities in the Deficit Reduction Act of 1984. We believe the better option to be the external funding one and KCPL is ordered and directed to immediately seek proposals for an external funding mechanism and to submit a plan for Commission approval as soon as possible.

11. Consistent with testimony from all the witnesses, the Commission will review the decommissioning component of this Order at least every three years.

VIII. WOLF CREEK O&M EXPENSE

1. Included in the application in this matter was applicant's share of the $64.9 million in Operations and Maintenance expenses projected for Wolf Creek, not including nuclear fuel expenses. In the common hearing portion of these proceedings, staff proposed two adjustments. The first was to exclude $202,989 in EEI assessments for TMI cleanup costs. The other adjustment was to adjust out the salary and fringe benefits of the Project Director who no longer works on the Wolf Creek site. The two adjustments totaled $588,564.

2. Applicant did not contest staff's adjustment and no specific adjustments were proposed by the other parties. The Commission finds these adjustments appropriate and reasonable and accordingly adopts them. Applicant's share of these adjustments is $276,625 (Kansas jurisdictional—$89,242). The Commission would expect staff to evaluate the actual O&M expenses in the permanent case to determine their reasonableness.

IX. WOLF CREEK DEPRECIATION RATE

1. Applicants in this case originally requested a depreciation rate of 3.53 percent based on a forty-year life. The applicants' witness, James Aikman, noted that re-

maining life depreciation was more appropriate than straight line rates but at the beginning of as asset's life, there was no difference in the resulting rates. Staff recommended a straight line depreciation rate of 3.44 percent. As sponsored by witness Melinda Mosher, this rate was based on a span life of thirty years, annual interim retirements of 12 percent and a net salvage rate for interim retirements of —6 percent. Her rate did not allow for forecasted interim additions under the theory that to do so would allow for recovery of investment not yet made.

2. Applicants stipulated to staff's proposal for purposes of this case only and without implication for the useful life of the plant. Other parties also stipulated to the staff recommendation. The Commission finds the staff depreciation rate of 3.44 percent reasonable and adopts the same. We should note that in making this finding, it is unnecessary to determine whether remaining life depreciation or the straight line method is most appropriate for Wolf Creek, since the rates would be the same under either at this time. We expect to address this issue some time in the future and would merely indicate that, in view of the unique nature of this investment we do not foreclose use of remaining life.

X. MISCELLANEOUS

A. *FUNDING FOR PAYMENT OF DIVIDENDS*

1. From 1977 to 1984, the owner utilities found themselves in a restrictive financial situation. Nevertheless, dividends were not only paid but increased during this time period. In light of the financial condition of the owner utilities, it has been argued dividend payments should have been suspended.

2. If it is determined that an electric utility has borrowed funds in order to pay dividends, and the borrowing to pay dividends was imprudent, the Commission may

adjust the utility's revenue requirement accordingly. K.S.A. 66-128e.

3. There has been no conclusive evidence that KCPL externally financed the payment of dividends during the construction of the Wolf Creek Generating Station. Over the course of the construction program there appears to have been adequate internal cash flow to meet the cash payment of dividends, though the company may have borrowed funds to meet temporary shortfalls.

4. The Commission is unable to conclude the payment of dividends during construction of the Wolf Creek Generating Station was imprudent. The prudence of dividend payments must be assessed in light of the circumstances that existed at the time the payments were made and irrespective of the prudence of the decision to invest in, or continue investing in, the Wolf Creek Generating Station. Under the conditions that existed it is doubtful suspending dividend payments would have improved the owner utilities' financial conditions or would have reduced the ultimate cost of building Wolf Creek. If dividends had not been paid during the construction phase of the Wolf Creek Generating Station, the owners would likely have been unable to issue common stock at or near its book value.

5. Although the payment of dividends may not have been imprudent, we must express concern about the decision to increase dividends from 1977 to 1984. Particularly during the latter stages of the project, increasing dividends may not have been in the best interest of the company, the stockholders or the ratepayers. If dividends had not been increased, additional funds would have been available for internal funding of construction costs.

6. It is not clear that dividend payments *per se* during construction of the Wolf Creek Generating Station were an imprudent decision on the part of the owner utilities.

B. *IMPOSITION OF WOLF CREEK FINES AND PENALTIES AND RATEMAKING TREATMENT THEREOF*

1. NRC Inspection Reports reveal KG&E's quality assurance function was ineffective in the early years of construction of Wolf Creek. (Exhibit G-Staff-63, p. VIII-22).

2. Quality related concerns resulted in increased monitoring by the NRC, the issuance of citations and the imposition of civil penalties. (Exhibit G-Staff-63, p. XI-32, Schedule VIII-6, p. 121). For example, in the 1983 the owner utilities were assessed a $40,000 civil penalty for failure to adequately control activities affecting the quality of safety related systems. (Exhibit G-Staff-63, p. XI-33).

3. With regard to the proper ratemaking treatment of such fines and penalties, the Commission is not inclined to allow expenses associated with the payment of fines and penalties to be passed through to the ratepayer. Pursuant to K.S.A. 66-128i, fines and penalties assessed by the NRC are presumed to have resulted from a lack of prudence and if the presumption is not rebutted by competent evidence, the Commission may reduce the utilities' revenue requirements accordingly.

4. In this case, the fines assessed by the NRC were properly excluded from the utilities' rate requests. (Brown, TR. Vol. IV, p. 1285).

C. *PERIODIC REPORTS*

1. Inherent uncertainties surrounding commercial operation of the state's first nuclear generating facility require the rate relief granted to be interim in nature, subject to true-up at a subsequent proceeding. Without historic data, operating and maintenance costs must be projected. The fact that a plant the size of Wolf Creek has not been retired creates great uncertainty about the

cost of decommissioning. The effect Wolf Creek will have on the owner utilities' overall generating mix has prompted concerns about fuel savings, reliability, the need for power and the cost of replacement power. These and other issues cannot be addressed with the desired level of certainty until actual operating data is available.

2. The existence of excess generating capacity and the decision to disallow costs associated with the amount of capacity not required to be used has magnified the importance of accurately assessing and continually evaluating system peak demand and load growth. If the demand for capacity grows, and a greater amount of the Wolf Creek Generating Facility is required to be used, appropriate adjustments may be made.

3. In light of these uncertainties, and in anticipation of subsequent true-up proceedings, periodic review and oversight of certain Wolf Creek related issues will be necessary.

4. Pursuant to the authority vested in the Commission under K.S.A. 66-101, *et seq.*, KCPL is hereby instructed to file formal quarterly reports concerning the Wolf Creek Generating Station's: 1) equivalent availability; 2) capacity factor; 3) scheduled and forced outages; 4) operating and maintenance expense; and 5) decommissioning estimates. In addition, the quarterly reports must include an evaluation of total system peak demand, total system load growth and information concerning insurance coverage for property damage, liability and replacement power attributed to incidents at Wolf Creek.

D. *JOINT UNIT COMMITMENT AND ECONOMIC DISPATCH*

1. Pursuant to the utilities' obligations to provide, and the Commission's authority to require, reasonably efficient and sufficient service, the Commission has the

responsibility to monitor the utilization of generating facilities of jurisdictional utilities.

2. The commercial operation of the Wolf Creek Generating Station will alter or otherwise affect the unit commitment and dispatch practices of KG&E, KCPL and other interconnected utilities. (Russell, TR. Vol. A-7, p. 1636-1642; Evans, TR. Vol. A-7, p. 1856-1861, 1864-1865; Trask, TR. Vol. A-7, p. 1887-1888; Branca, TR. Vol. A-7, p. 1916-1917; Pauley, TR. Vol. A-7, p. 1734-1735, 1740-1741).

3. The objective being to minimize costs while ensuring adequate and reliable service, the Commission encourages jurisdictional utilities to conduct a comprehensive evaluation of centralized dispatch, joint unit commitment and other means of improving coordination in wholesale markets and increasing economic efficiency and overall reliability. (Russell, TR. Vol. A-7, p. 1642-1648, 1665-1666; Lanzalotta, TR. Vol. A-7, p. 1623-1624; Pauley, TR. Vol. A-7, p. 1735-1737, 1742-1744).

4. The optimal utilization of generating facilities, and the reliability of existing generating facilities and available reserves should also be considered in the utilities' evaluation of methods to enhance economic coordination among interconnected utilities. (Russell, TR. Vol. A-7, p. 1658-1660, 1669-1670; Lanzalotta, TR. Vol. A-7, p. 1609-1615; Evans, TR. Vol. A-7, p. 1841-1854, 1872-1875; Trask, TR. Vol. A-7, p. 1880-1883; Pauley, TR. Vol. A07, p. 1733-1735, 1737, 1747-1748).

XI. KCPL COMPANY—SPECIFIC ISSUES

A. *INTERIM RATE RELIEF*

1. Staff witness Yates testified that any rate increase the Commission authorizes as a result of this rate application should be of an interim nature, subject to refund, after consideration in a permanent rate case based on a period of actual WCGS commercial operation. His recom-

mendation stems from his analysis of the budgeted or forecasted test year used in this case. He first discussed the disadvantages inherent in basing rate relief on a forecasted test year: speculation about a great deal of different operating data is required; the forecast or budget could be inflated to maximize the rate request; and management judgment rather than objective, verifiable data is being evaluated. He next described problems encountered in his review of the 1985 budget: difficulty verifying whether construction projects would be completed within the test year; concern that the individual components of the budget might be overestimated given the decentralized nature of the process (managers might put slack in their budgets); the lack of uniform parameters in the corporate planning guide; inability to evaluate the predicted generation mix; variances between past budgeted and actual revenues and expenses; and difficulty assessing the projected WCGS costs.

2. Pursuant to a stipulation of parties, the test year in this case is a projection of the calendar year 1985 adjusted to reflect 12 months operation of WCGS, a 13 month average rate base, and fuel inventory and cash working capital calculated according to the principles adopted by the Commission in the last KCPL rate case, Docket No. 133,002-U. This projected test year was to be reconciled to the historic 12 month period ending March 31, 1984.

3. KCPL requested permanent rate relief—either through a one time increase or a phase-in plan. Thus, Mr. Levesque testified for KCPL in rebuttal to Mr. Yates' proposal that this case be interim. He disagreed that basing rate relief on an adjusted historical test year is any better basis for rate relief than a projected test year. He emphasized that in either case, variables and relationships among variables can change, and this latter fact is ignored in an historical test year approach. He

noted that overall, there has been very little variance between actual and budgeted O&M expenses. He testified that KCPL's budget system engenders a high degree of accuracy, and that KCPL has monitoring and variance reporting procedures in effect as part of the budget procedure. Contrary to Mr. Yates's position, Mr. Levesque finds a forecasted test year to be a better basis for setting future rates than an adjusted historical test year. He believes that KCPL seeks to budget the optimum plan that balances the needs of all concerned.

4. In its brief, KCPL asserted that the test of whether rates should be interim is whether a refund is possible. We disagree. We have considered applicant's testimony regarding the use of a forecasted test year and the accuracy of its budgeting process. We find that this case has certain unique aspects that warrant interim rate case treatment. This rate application concerns the commercial operation of the first nuclear generating station for the owners and for Kansas. Operating expenses for such a plant are uncertain having never before been experienced or estimated by these owners. The fact that a budgeted or forecasted test year is used in this case is not the sole basis for our decision that this case should be interim in nature. Primarily we believe interim rates are appropriate here because of the many uncertainties involved with the commercial operation of a major base load nuclear generating station. We believe that permanent rate relief can only be granted after a period of actual commercial operation of the WCGS. Therefore, we direct that KCPL base its permanent rate application on six months of actual operating data from the WCGS. This time period, less than a year, will give the minimum operating history we believe is necessary to serve as the basis for permanent rate relief. The six month period shall commence as of the initial date of WCGS commercial operation, September 3, 1985.

B. *NON-WOLF CREEK RATE BASE MATTERS*

1. With the exception of the WCGS issues discussed above, and certain aspects of the jurisdictional allocation process, discussed below, there is no contested issue with regard to KCPL's jurisdictional rate base. Staff proposed a total of nine adjustments to KCPL's jurisdiction rate base. Staff Adjustment No. 1 reflects staff's jurisdictional allocation methodology, sponsored by staff witness Marker and discussed in a subsequent portion of this order entitled "Jurisdictional Allocations." The effect of this adjustment is to reduce rate base $30,710,000. We adopt this adjustment as the proper quantification of our adopted allocation factors.

2. Staff Adjustment No. 2 increases rate base by $52,879,000 as a result of reclassifying certain customer related capital. Staff also included the customer related capital in the capital structure at zero cost. The Commission finds this treatment appropriate and adopts Staff Adjustment No. 2 to rate base.

3. Staff Adjustment No. 3 to rate base is a quantification of the PMA adjustment discussed previously in this order. In addition, Adjustment No. 3 is dependent on our decision related to jurisdictional allocation factors. We adopt Staff Adjustment No. 3 to rate base because it properly reflects the earlier adopted PMA adjustment and our adopted allocation factors by reducing rate base $39,606,000.

4. Staff Adjustment No. 4 has no dollar impact on rate base. This adjustment reflects the retirement of Hawthorn Unit Nos. 1-4, by decreasing both the electric plant production account and the accumulated provision for depreciation of electric production plants. The Commission adopts Staff Adjustment No. 4 to rate base, to the extent that it is consistent with our findings regarding the retirements of those units as discussed earlier in this order.

5. Staff Adjustment No. 5 reflects the application of staff's recommended depreciation rate for nuclear production plants. The owners did not contest this staff recommendation. We adopt Staff Adjustment No. 5 and approve of the methodology used to quantify staff's depreciation rate which we adopted earlier in this order.

6. Staff Adjustment No. 6 removes from rate base $203,000 of transmission plant which will not be completed during 1985. We find Adjustment No. 6 to be in conformity with law and Commission practice, and therefore, we adopt Staff Adjustment No. 6 to rate base.

7. Staff Adjustment No. 7 was withdrawn by staff witness Proctor prior to hearing because it conflicted with a stipulation regarding the computation of fuel inventory for this particular rate case.

8. Staff Adjustment No. 8 to rate base decreases rate base by $168,000 for the LaCygne Turbine Plant that will not be completed during 1985. We find that this adjustment is reasonable and proper and adopt Staff Adjustment No. 8 to rate base.

9. Staff Adjustment No. 9 to rate base increases net cash working capital, and thus rate base, by $4,509,000. This adjustment reflects changes due to staff's adjustments to operations. Because we have not adopted these adjustments as proposed, we direct that Adjustment No. 9 be modified to reflect our decisions regarding KCPL's operating statement. We adopt Staff Adjustment No. 9, as modified herein, to increase net cash working capital (and rate base) by $4,055,000.

C. *NON-WOLF CREEK OPERATIONS MATTERS*

1. Staff proposed ten adjustments to operations.

2. Staff Adjustment No. 1 to operations reflects staff's jurisdictional allocation methodology as proposed by staff witness Marker. We have adopted staff's proposed juris-

dictional allocation methodology in another part of this order entitled "Jurisdictional Allocations." We find Staff Adjustment No. 1 to operations to be a corresponding adjustment to Staff Adjustment No. 1 to rate base, which we have adopted. Staff Adjustment No. 1 to operations increases net operating income by $945,000. We find it to be reasonable and proper and adopt it as proposed.

3. Staff Adjustment No. 2 to operations is uncontested by KCPL. This adjustment quantifies the impact of staff witness Yates' adjustment to Wolf Creek expenses. We have earlier adopted staff's witness Yates' adjustment regarding Wolf Creek expenses and we hereby adopt Staff Adjustment No. 2 to rate base which increases net operating income by $89,000.

4. Staff's proposed adjustment No. 3 would increase production expense by $588,000 to increase the annual provision for decommissioning of WCGS. We have discussed the allowance for decommissioning expense in an earlier section of this order entitled Decommissioning. In conformity with our earlier findings we find staff's adjustment reasonable in principal, but find that the annual provision for decommissioning expense should be $253,000. Therefore, staff's adjustment is reduced to an increase of $253,000 in the annual provision for decommissioning expense.

5. Staff Adjustment No. 4 to operations increases net operating income by $726,000. This adjustment reflects the effect of the depreciation rate that was sponsored by staff witness Mosher and uncontested by the owners. We find Staff Adjustment No. 4 to operations appropriate, and we adopt it as a corresponding adjustment to our earlier adopted depreciation rate.

6. Staff Adjustment No. 5 to operations decreases depreciation and amortization expense. This adjustment corresponds to Staff Adjustment No. 3 to rate base which quantifies the PMA adjustment adopted by the

Commission. Since we have earlier adopted a revision of PMA's proposed adjustment, we find that Staff Adjustment No. 5 to operations must be modified to reflect our earlier modification of the PMA proposed adjustment. We find the methodology staff used appropriate and proper, and adopt Staff Adjustment No. 5, as revised, to decrease depreciation and amortization expense, thus increasing net operating income, by $1,525,000.

7. Staff Adjustment No. 6 to operations decreases the property tax applicant included in its cost-of-service. Staff's proposed adjustment would eliminate property taxes related to the Wolf Creek investment expenditures proposed to be disallowed by staff witness, Dr. Ponce de Leon, of Project Management Associates, (PMA).

8. KCPL witness Cattron testified that ad valorem or property taxes for KCPL are a legitimate cost of operating and owning property in any taxing district and cannot be avoided. He also states that a reduction in KCPL's assets will not necessarily avoid property taxes but merely redistribute the burden among taxpayers. Mr. Cattron apparently believes that the intent of Staff Adjustment No. 6 is to adjust the property tax expense to the actual property tax which KCPL will incur.

9. Staff, on the other hand, indicates that the purpose of the adjustment was to exclude property tax expense associated with an investment which staff contends should not be allowed in rate base. KCPL's estimate of property tax expense is an original cost calculation. If a portion of the WCGS original cost is found to be imprudently incurred, it follows then, that a similar portion of property tax is attributable to imprudency. Staff reasons that the ratepayer should not be required to absorb imprudently incurred costs whether attributable to rate base or expenses.

10. The Commission agrees that it would be inequitable to require the ratepayer to bear the burden of ex-

penses incurred due to imprudent investment. Earlier in the order we have disallowed certain WCGS construction costs as imprudent. Therefore, we find Staff Adjustment No. 6 to be reasonable and hereby adopt it. However, because the Commission has previously modified the proposed PMA disallowance, we direct that Staff Adjustment No. 6 to reduce property taxes should be reduced accordingly. Therefore, we adopt a modified adjustment of $252,000 to decrease the allowable property tax expense associated with WCGS.

11. Staff Adjustment No. 7 to operations would decrease Operations, Maintenance and Depreciation expenses. Staff asserts that the adjustment is necessary to eliminate certain expenses included in the applicant's cost-of-service for the retired Hawthorn Units 1-4. Staff reasons that these expenses will either not be incurred or should not be charged to customers through inclusion in the cost-of-service since the retired units are no longer used and required to be used. The adjustment would decrease operations expenses by $6,654,093 (total company). Using staff's allocation method, which we find reasonable and adopt elsewhere in this order, the Kansas jurisdictional adjustment would be $2,143,198.

12. KCPL does not contest most of the adjustment. However, KCPL does oppose the adjustment to the extent excluded expenses relate to "common facilities" and "general company expenses." KCPL asserts that $1,216,000 is necessary to maintain certain common facilities which had previously been allocated to Hawthorn Units 1 through 4 and Unit 5 are necessary expenses in order to maintain operation of Unit 5. Examples of common facilities are the administration building, in-take structure, railroad spur, and all other facilities necessary to operate Unit 5. General company charges are those costs related to general operations of the company but allocated to specific generating units. KCPL asserts that the retirement of Units 1 through 4 does not obviate the need to

incur expenses related to the company's clearing accounts and computer center. The company requests an allowance of $546,000 for general company expenses.

13. Additionally, KCPL opposes a portion of adjustment No. 7 to operations because staff has proposed to eliminate property tax on Units 1-4 from the KCPL cost of service. KCPL contends that even if the units are retired, KCPL will be liable for continuing ad valorem tax expense, levied against the retired units. KCPL also asserts that staff's proposal excludes a portion of the property tax expense associated with Hawthorn common facilities.

14. As noted previously in this order, the Commission is including the generating capacity represented by Hawthorn Units 1 and 2 in the Commission's computation of excess capacity for rate of return purposes regarding WCGS. Hawthorn Units 1 and 2 represent 43.33 percent of the generating capacity represented by Hawthorn Units 1-4. Accordingly, the Commission adopts, as reasonable, the proposition that 43.33 percent of the operations expense included in KCPL's original application represents an appropriate level of expenditures for maintenance of Hawthorn Units 1 and 2. The remaining expenses associated with Hawthorn Units 3 and 4 should be eliminated in conformity with the spirit of staff's original adjustment. This is consistent with the ratemaking principal that expenses associated with facilities which are not used and required to be used in service are not properly included in a utilities cost-of-service. Implementation of this principal results in a reduction to staff's adjustment of $929,000, thereby reducing staff's adjustment to an exclusion of $1,214,000 from KCPL's cost-of-service.

15. Staff Adjustment No. 8 to operations decreases depreciation and amortization expense by $4,000. This adjustment corresponds to Staff Adjustment No. 6 to rate

base regarding the transmission plant that will not be completed in 1985. We have earlier adopted Staff Adjustment No. 6 to rate base, and we find it is necessary to adopt a corresponding adjustment to depreciation and amortization. Therefore, we adopt Staff Adjustment No. 8 as proposed.

16. Staff Adjustment No. 9 to operations decreases the applicant's operation and maintenance expenses and payroll taxes in order to reflect the staff's proposed elimination of 121 vacant positions from the budgeted 1985 cost-of-service. KCPL contends that the adjustment more properly should relate to 94 positions rather than 121 positions. Additionally, KCPL contends that staff improperly overstates the amount of the adjustment because only 75 percent of KCPL's labor costs are charged to electric operations and maintenance expense.

17. Staff witness Proctor testified that the exclusion of 121 vacant positions from the KCPL cost-of-service was based on KCPL's response to Data Request No. 9068. That data request response indicated a variance between the March 31, 1984 staffing levels and the 1985 test year budget of 121 employees. In addition, Mr. Proctor testified, that over a 34-month historical period ending in December, 1984, KCPL averaged more than 150 vacancies in budgeted payroll. Additionally, the apparent trend has been a steadily increasing number of vacancies during an historical period prior to the KCPL application. Given these circumstances, staff's adjustment excluding the expense associated with 121 employee positions appears appropriate, although perhaps an exclusion of a greater number of employee positions may also have been supportable.

18. KCPL witness Yetter stated that Mr. Proctor's reliance upon Data Request No. 9068 is not justified because to do so compares the actual number of employees to the authorized number of positions rather than the

budgeted number of positions. Mr. Yetter states that the KCPL rate request is based on KCPL's 1985 pro forma budget, not its 1984 budget. Therefore, he reasons, a proper analysis would be to compare actual manpower levels to pro forma budgeted manpower levels.

20. On cross-examination, Mr. Yetter was presented a copy of staff's Data Request No. 9068. He indicated that he had prepared KCPL's response and that response attributed part of the variance between KCPL's March 1984 income statement and the test year income statement to vacant positions included in the test year budget. The vacant positions are attributable to an assumption that they would be filled during the test period. We find that assumption inappropriate given that Mr. Yetter also testified that employment levels will remain stable during the test year. Mr. Yetter offered no evidence which would indicate staff's interpretation of the response to Data Request No. 9068 is inaccurate. When asked whether the response did in fact support an adjustment for 121 employee positions, he indicated that he had not attempted to reconcile the response with any number of vacancies.

21. We find that the 121 vacant employee positions is supported by the evidence as presented by staff witness Proctor. Although the lesser number of 94 vacant positions may also be supportable, we find no evidentiary basis on which to reduce the adjustment. Additionally, the Commission notes that based on the historical trend an adjustment excluding a greater number of vacant employee positions may have been justified. As noted by Mr. Proctor, the trend has clearly been one of an increasing number of employee vacancies. This was in part, supported by the testimony of Mr. Yetter. In addition, it is likely that staffing levels will be reduced upon commercial operation of WCGS. As KCPL witness Evans states, "manning levels will need to be reviewed carefully to determine whether additional reductions in personnel could be accomplished." (Evans, TR. Vol. A-7,

p. 1826). The notion that staff's adjustment should be reduced by 25 percent because only 75 percent of employee expense is allocated to KCPL electric operations is not well-founded. Although the 75 percent allocation to electric operations is true on a company wide basis, the same is not true when referring to employee expense in the company's electric operations. Since the 1985 budget, upon which the adjustment is based, is KCPL's electric operations budget we find staff's adjustment excluding the expenses associated with 121 vacant employee positions is both reasonable and supported by the evidence. Therefore, staff adjustment No. 9 to operations is hereby adopted.

22. Staff Adjustment No. 10 to operations adjusts current income taxes to reflect the earlier proposed staff adjustments to operations. This adjustment may be viewed as a "fallout" adjustment. To the extent that we have adopted other adjustments to operations in this order, we necessarily adopt Staff Adjustment No. 10 to operations, as modified to correspond to our earlier findings regarding the other adjustments to operations.

D. *SUMMARY OF THE RATE BASE AND OPERATING INCOME ADJUSTMENTS*

The Commission therefore finds that based on the above findings, the test year pro forma rate base is $409,958,000, and the test year pro forma operating income is $29,099,000, as set forth in the Appendix attached to this order.

E. *RATE OF RETURN*

1. Two witnesses presented testimony on rate of return. Mr. Michael York testified on behalf of the Commission staff and Mr. Bernard Beaudoin testified on behalf of KCPL. To evaluate the rate of return for KCPL, staff and KCPL used the discounted cash flow (DCF) methodology. KCPL also utilized the risk premium method

to support its DCF analysis. The DCF has been the predominant method of calculating the rate of return on common equity before this Commission and was the accepted methodology in the last KCPL rate case.

2. In performing the DCF analysis, staff used directly observable market data because KCPL is a publicly traded utility.

First, staff estimated the dividend payments for the four quarters beginning with the second quarter of 1985 and ending with the first quarter of 1986, by analyzing various market publications which publish dividend estimates. Using these estimates, staff arrived at a second quarter 1985 dividend of 59 cents, a third quarter 1985 dividend of 59 cents, a fourth quarter 1985 dividend of 59 cents and a first quarter 1986 dividend of 61 cents.

3. Second, staff selected the price at the close of trading on March 21, 1985, to use a current price in the DCF analysis. The anomalies which can bias a single day price choice were avoided by staff through tracking the prices during the period of analysis and choosing a day with an unbiased price. The price at the close of trading March 21, 1985, was $22.00. Staff selected a representative price of a recent day for use in the DCF analysis because that is the price at which an investor can currently purchase stock. An average of annual, semi-annual or monthly stock prices was not used because investors cannot buy stock at average prices. The Commission believes that the current price is an appropriate price to use in the DCF analysis because it reflects all the information available to a company's investors regarding future profitability and risk of the company. Therefore, the yield investors require on any date is the discount rate that equates the price and the expected stream of future dividends on that base.

4. Third, Staff derived the average growth rate for KCPL by averaging both historic growth rates and future

growth estimates to arrive at an average growth rate of 4.00 percent. The Commission finds that staff's estimate of growth was an appropriate estimate to use in its DCF analysis because investors review both historic results and future growth projections when making investment decisions. Of the eleven estimates used by staff to obtain the average growth rate, three were historic and eight were forecasted. This tended to weight the analysis in favor of future projections. Such weighting allowed a better reflection of future growth expectations since the "Wolf Creek operational period" should be quite different, from a financial standpoint, from the "Wolf Creek construction period." Staff considered an average growth value in the 3.00 to 4.00 percent range appropriate based on the market's assessment of future growth although the 4.00 percent estimate was considered the best estimate.

5. Last, staff arrived at an estimate of the market cost of equity for KCPL of 15.42. Staff then adjusted it to reflect the effect on stock price of floating new stock, market information, and supply and demand pressures to arrive at a reduction in the relative stock price, on the average, of 5.37 percent. The Commission believes that staff's adjustment was proper because flotation costs are incurred only in the acquisition of funds through common stock issuances and are not incurred with funds acquired through retained earnings. Therefore, staff's use of the adjusted cost of equity figure for the portion of the funds acquired through common stock issuances and the market cost of equity for the funds obtained from retained earnings was appropriate. The resulting weighted cost of 15.80 percent was staff's recommended cost of equity.

6. In making its recommendation, staff took into account that the market reflects all of the information available to investors about a company. Therefore, the Commission finds that staff's recommendation reflected

investors' perceptions of the risk of the company. This would certainly be true in the instance of a public utility, such as KCPL, because of the widespread dissemination of information concerning utilities' nuclear construction projects and the rate cases dealing with nuclear plants once they are completed. Investors and forecasters are aware of the range of potential outcomes of nuclear plant rate cases. They are also aware of the potential effects of nuclear rate case decisions on utility companies and they take those potential effects into account when making investment decisions and forecasting determinations. Because the current market price reflects KCPL investors' perceptions of the potential outcomes of the pending rate case, no adjustment for any potential outcome, not even for a potential elimination of KCPL's ability to pay dividends, should be made.

7. Staff's recommended cost of equity differed from the equity recommended by KCPL in several respects. First KCPL estimated that investors expect a 6.00 to 7.00 percent dividend growth rate before they will invest in KCPL stock. In arriving at this estimate, KCPL only evaluated cash dividend continuous (or trended) growth rates from the 1979 to 1984 period. Based on that data, the 6.00 to 7.00 percent range was an accurate estimate but it failed to consider the many other criteria investors take into account when making investment decisions and the factors which affect the growth rates of dividends. Staff, in developing its 4.00 percent average growth rate, took into account eleven different valuations of growth which reflected a variety of factors. The Commission finds that staff's method was a more comprehensive and, therefore, a more accurate basis for an estimate than KCPL's reliance on only one factor.

8. In measuring the current dividend yield, KCPL divided the current annual dividend rate by the current market price. KCPL used a twelve-week average of 14.00 percent as the appropriate dividend yield. KCPL used

the twelve-week average to avoid any stock yield irregularities. A spot market price is the better price to use because it is more reflective of investor expectations than an average price because investors do not buy average prices or trends. Also, the anomalies that can bias a single day price choice can be avoided through tracking the stock during the period of analysis and choosing a price of an unbiased day. The most recent stock price is the theoretically correct evaluation to use because it reflects all the information available to a company's investors. In arriving at its dividend estimate, KCPL used a historical perspective by utilizing the dividend yields of the last four quarters. If KCPL had used a spot market yield instead of the average market yield, its recommended cost of equity would have been lower.

9. Last, KCPL included in its definition of flotation costs, price pressure and flotation costs incurred in issuing common stock. It was inaccurate to include both price pressure and flotation costs because the flotation cost adjustment was already included in the adjustment for price pressure. Also, KCPL applied flotation costs and price pressure to both common stock proceeds and retained earnings while staff applied flotation costs and price pressure only to common stock proceeds. It was incorrect to apply flotation costs and price pressure adjustments to common stock proceeds and retained earnings because the costs were incurred only in the acquisition of funds through flotation of common stock. Retained earnings were not acquired through a stock issuance and, therefore, were not subject to flotation costs and price pressure.

10. In its brief, KCPL stated it was concerned over the impact on KCPL of staff's recommended total rate increase and expressed the view that if staff's proposal was adopted, including staff's recommended rate of return of 15.80 percent, the end result would violate the fourteenth amendment of the U.S. Constitution. KCPL's reasoning might be sound if the total amount of the

staff's proposed rate increase applied to the total investment in Wolf Creek made by KCPL instead of applying only to the prudently incurred investment. In *Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia*, 262 U.S. 1176 (1922), the Court held that:

> A public utility is entitled to such rates as will permit it to earn a return on *the value of the property which it employs for the convenience of the public* . . . (Emphasis added) (p. 1182).

Imprudently incurred investment is not employed for the convenience of the public so it should not be included when considering the reasonableness of the return.

11. In *Bluefield Water Works* on page 1181, the Court cited the lower court's decision in the same case (89 W. Va. 736, 110 S.E. 205 at p. 739-740) which stated:

> In our case of *Coal & Coke R. Co. v. Conley*, 67 W. Va. 129, 67 S.E. 613, at said: "It seems to be generally held that in the absence of peculiar and extraordinary conditions, *such as a more costly plant than the public service of the community requires, or the erection of a plant at an actual, though extravagant cost*, or the purchase of one at an exorbitant or inflated price, the actual amount of money invested is to be taken as the basis, and upon this a return must be allowed equivalent to that which is ordinarily received in the locality in which the business is done, upon capital investment in similar enterprises." (Emphasis added)

The Commission finds that the extraordinary circumstances referred to above are present in the instant case and that it is appropriate to determine the recommendation of rate of return coincidentally with the exclusion of imprudently incurred investment. It would be improper not to make a fully informed decision regarding rate of return. In determining a fair return on common equity:

> . . . (R)egulatory bodies and courts have long recognized that the resolution of cost of capitol issues, including the return for common equity, depends primarily upon informed judgment.

(Docket No. 123,773-U Ordered, February 24, 1981, at 65-66. Cited with approval in Docket No. 128,811-U, Order, February 19, 1982, at 94; Docket No. 137,534-U, Order, December 23, 1983, at 80-81; and Docket No. 143,565-U, Order, June 13, 1985, at 12.)

12. The Commission considered all of the evidence relating to this issue, the recommendations of staff and the company and, in its informed judgment, finds that the appropriate rate of return for KCPL at this time is 15.80 percent.

REVENUE DEFICIENCY

1. When a rate of return of 11.236 percent is applied to the previously adopted Kansas jurisdictional rate base of $409,958,000, the result is an operating income requirement of $46,063,000. When compared to test year operating income as adjusted and adopted herein, we find applicant has additional operating income requirements totaling $16,971,000. Assuming an appropriate income tax factor, applicant's gross annual revenue deficiency is $33,703,000 (before fuel savings), as calculated in the Appendix to this order.

2. Applicant, Staff and Johnson County Joint Intervenors presented testimony on the phase-in of the rate increase arising from this case. Witnesses for all three parties agree that a phase-in was desirable to avoid a sudden sharp increase in rates. They disagreed, however, on what percentage increase would justify a phase-in and what period of time should be used.

3. The Commission does not find it necessary to further summarize the evidence on this issue since we conclude that a phase-in of the rate increase we approve herein is not necessary or desirable. After fuel savings,

KCPL ratepayers will realize an increase in rates of approximately 16 percent. We recognize that this increase cannot be said to be insignificant. However, we do believe that it is manageable and does not represent the kind of rate shock which the parties envisioned as requiring mitigation through phase-in. Our conclusion is also based on the fact that a phase-in, because of the accrual of carrying costs on deferred revenues, eventually increases the total cost to ratepayers. In balancing such considerations, we conclude a phase-in should not be ordered.

G. *JURISDICTIONAL ALLOCATIONS*

1. Currently KCPL's jurisdictional rates are based on a 12 coincident peak (C.P.) allocation factor, pursuant to this Commission's last KCPL rate order dated March 29, 1983, (Docket No. 133,002-U). In that order the 12 C.P. method was found superior to the company's 4 C.P. method because the former recognizes investment in base load facilities which are utilized year round and not solely during the summer peak months.

2. In the present rate case, KCPL's witnesses Knodel and LaCapra recommended that production capacity costs be allocated among jurisdictions based on the average of the four coincident summer maximum peak loads. Mr. LaCapra testified that the summer peak is KCPL's central planning concern in assessing the need for new capacity. KCPL's rebuttal witness Sullivan, recommended the 4 C.P. demand allocator as a compromise between the 12 C.P. allocator proposed by the Kansas Commission staff and the 1 C.P. allocator proposed by the Missouri Commission staff. He expressed concern that KCPL might not recover all of its investment if different jurisdictions use different production allocators. Yet Mr. Knodel acknowledged that if KCPL's proposals were adopted in Kansas and in Missouri, KCPL could recover slightly more than 100% of its total investment based

on the different test years used in the two jurisdictions. Mr. Sullivan noted that the F.E.R.C. had adopted the 4 C.P. method. He concluded that the 4 C.P. allocator better reflects the primary cost causative factor in KCPL's investment in generating capacity that is, the need to meet summer peak.

3. Staff witness Marker opposed the 4 C.P. method stating it does not recognize the capacity requirements associated with the eight non-summer months. He recommended that KCPL's production and transmission plant be allocated among the jurisdictions by means of a 12 C.P. allocator because such an allocator recognizes the capacity requirements in all twelve months of a year. Mr. Marker testified that a utility determines the type and cost of its capacity by means of the total loads during all twelve months of the year, not just the annual system peak load. He explained that system peak load may determine the total amount of generation capacity, but not the type and cost of that capacity. To illustrate his point, Mr. Marker noted that with the inclusion of Wolf Creek, 98.6 percent of KCPL's total production rate base is base load capacity on a dollar investment basis, and that on a Kw basis, 85.4 percent of KCPL's production capacity is base load. Further he testified that KCPL's net investment in base load plant is $697 per Kw, while its net investment in other plant is only $57 per Kw.

4. We note that KCPL has filed this rate application because of the anticipated commercial operation of the Wolf Creek Generating Station (WCGS). KCPL's witnesses, Mr. Doyle, Mr. LaCapra, and Mr. Sullivan, acknowledged that WCGS is a base load unit. The issue before us is how to allocate production and transmission plant among the jurisdictions to reflect what portion of that plant is dedicated to the Kansas jurisdictional ratepayers, and therefore, should be paid by them. This is not an issue of pricing to manage load. As Mr. Marker has testified, with the addition of WCGS, production rate

base will be 98.6 percent base load capacity. Earlier in this order we have set forth our findings regarding the valuation of the WCGS for ratemaking purposes. Even in view of these decisions, KCPL's investment in base load facilities will be greater than 94% of its total investment once Wolf Creek is included. (TR. Vol. A-4, p. 881). It is clear that KCPL did not invest in WCGS to serve only summer peak load. Therefore, we find that the 12 C.P. allocation factor is an appropriate method of allocating KCPL's production and transmission plant among jurisdictions. This method better recognizes KCPL's investment in base load facilities used year round, and not solely during the summer peak months.

Class C.O.S.

1. KCPL used a 4. C.P. allocator in its class cost of service. Mr. Marker testified that a 12 C.P. allocator was more appropriate for class cost of service as well as jurisdictional separations of production and transmission related expenses. For the reasons set forth above in jurisdictional allocations, we find the 12 C.P. allocator to be appropriate for use in the class cost of service allocations.

B. *RATE DESIGN*

Electric Space Heating Rate

1. KCPL's current space heat rates range from 3.74 cents per KWH to 3.81 cents per KWH. KCPL witness Knodel, with supporting testimony from KCPL's witnesses LaCapra and Sullivan, proposed that all existing space heat rates be reduced to 3.25 cents per KWH. The proposed 3.25 cents per KWH rate is above the 2.0¢ incremental cost of the service, thus KCPL believes the rate is neither subsidized nor discriminatory.

2. Staff witness Ron Ford recommends no change in the electric space heat rates. He considered the number of customers on the existing rate, the likelihood that they

would switch from electric space heating given their investment in space heating equipment, which has a useful life of fifteen years or more, and the impact on KCPL's non space heating usage customers of a reduction in the space heating rate to 3.25 cents per KWH. He considered the existing space heat rate to be price competitive with some alternative fuels. Mr. Ford also considered that some customers have individual preferences between gas and electricity that affect their decisions to choose gas heat or electric space heat.

3. KPL/Gas Service Company's witness, Mr. Johnson, testified in opposition to KCPL's proposed 3.25 cents per KWH electric space heat rate. Mr. Johnson felt that it was an unfair advantage over the KPL/Gas Service Company gas heating rate. He argued the electric space heating rate should be based on fully embedded costs.

4. We find that it is not unduly discriminatory or unreasonable to establish an electric space heating rate below fully embedded costs and yet above incremental costs. Such pricing recovers variable cost and recognizes electric space heating competes with other fuels in an off peak (non-summer) service. The question is how much of a contribution to fixed cost should be recovered through the electric space heat rate. KPL/Gas Service Company's proposal, in effect, would eliminate the rate and increase the total bills paid for electric space heating service drastically. This would be inequitable given that a lower space heating rate has been available for more than 20 years, and many customers have invested in electric space heating equipment. We find no persuasive evidence in the record to support increasing the space heating rate to cover fully embedded costs.

5. A decrease in electric space heating rates at this time will reduce the contribution to fixed costs with no assurance that the reduction will be made up in additional sales. We find that having the rates remain at the existing levels is the best alternative at the present

time for sustaining the contribution to fixed costs by the ratepayers and attracting additional customers to the service. We find the electric space heating rates should not be lowered at this time and we adopt staff's proposal to continue the rates at their present levels.

General Service Large and Small

1. KCPL now has separate tariffs for the general service large class and the general service small class. The general service small tariff applies to any non-residential customer, and contains a two step declining block energy rate with the size of the first block dependent on the highest annual demand of the customer. The general service large tariff applies to any customer with a minimum billing demand of 10 KW or more per month. It contains a four step declining block demand charge and a four step "hours use" energy rate. A customer's monthly load pattern determines how many KWH are in the respective energy blocks of the tariff.

2. KCPL proposed that the general service large and general service small classes be combined under one tariff with the rate structure similar to the existing general service large tariff. Mr. Giles and Mr. Sullivan sponsored testimony supporting this proposal. Mr. Giles explained that the company's objective is to reduce the average cost per KWH for its general service customers by pricing as follows: (a) reduce the tail block energy rate from 4.0 cents to 3.25 cents per KWH (this would be above the incremental cost of providing service off-peak), and (b) consider only 70 percent of the monthly demands occurring during the winter season for billing demand determination. He explained that this would encourage off-peak use but still deter increasing the summer peak.

3. Staff witness, Ron Ford, recommended that the general service small tariff remain separate from the general service large tariff. He proposed the small rate include a demand charge with no ratchet provision, and a flat

energy rate, rather than a two step declining block rate. He explained that this two part rate (demand and energy), better identifies the different types of costs that a customer puts on a system. He further recommended that the general service small rate not be available to any new customers with demands over 30 KW. Both KCPL and staff's witnesses used data from 30 load research customers of the general service small class in designing their proposed rates. Mr. Ford asserted that, with his proposal, general service small customers would be less likely to receive disproportionate increases as they would under KCPL's proposal. Mr. Giles disagreed stating that the spread of the increases for these customers is about the same under either staff's or KCPL's proposal. However, it is apparent to us from Exhibit A-Staff-16, Schedule C, p. 3, that more load research customers in the general service small class would receive a closer to average increase under staff's proposal than under KCPL's proposal.

4. Mr. Ford also recommended that the ratchet provision in the general service large class be reduced from 80 percent to 70 percent. Since most customers are billed under the ratchet in the winter season, this will decrease the winter billing demand for most customers in the general service large class. He explained that since the energy blocking is determined by the billing demand, more KWH will be priced in the lower energy block under his proposal and this will encourage more off-peak energy use while still controlling the summer peak. Mr. Ford testified that lowering the ratchet is consistent with the theory that the summer peak is not the sole determinant of cost causation.

5. Mr. Giles opposes staff's recommendation that new customers with demands over 30 KW not be allowed to use the general service small rate schedule. He claims a customer with high energy usage but low demand will be billed a lesser amount under the general service large schedule, so the customer would want to switch to that schedule.

6. Mr. Giles also opposes staff's proposal that the summer demand ratchet be reduced from 80 percent to 70 percent in the general service and primary service schedules. Presently a customer's demand is the highest of (1) 80 percent of the highest demand occurring during the summer season, (2) actual demand, or (3) 50 percent of the highest demand occurring during the winter season. KCPL proposes to consider only 70 percent of the actual winter demand, for billing purposes. Most customers are billed based on the summer demand ratchet. The 80 percent demand ratchet would encourage customers to reduce or at least not increase their summer demands. Mr. Giles argues that with staff's proposal to reduce the ratchet to 70 percent of summer peak usage, a customer could increase its summer peak usage without increasing its winter minimum billing demand. KCPL also criticized staff's proposed tail block rate as too high, arguing that off peak usage occurs in the tail block and thus the tail block should not recover as great a proportion of fixed costs as the demand charge and earlier blocks.

7. Intervenors Electro Dynamics, Inc. and Thermo Dymnamics, Inc., quartz growers in the Kansas City area, supported KCPL's rate proposals given the choice between KCPL's and staff's. As general service large customers with high load factors, they believe they will benefit more from KCPL's proposal than the staff's proposal. However, these intervenors also recommended the Commission begin to review the possibility of developing a rate for customers with constant resistive loads. The Commission notes that Mr. Sullivan testified the present rate structures already benefits high load factor customers. (TR. Vol. A-3, p. 522-537).

8. The Commission has fully considered the parties positions with regard to the general service large and small tariff structure. We find that the GS Large and Small classes differ significantly in KWH usage and

average monthly load factor. (Giles, TR. Vol. A-7, p. 1803 and Vol. A-3, p. 621). We find the impact on the GS Small customers would be too great if combined with GS large class and, therefore, we order the tariffs should remain separate for the general service large and small classes.

9. We note that data was available for only thirty customers in designing the rates for the General Service Small class, which has over 6,000 customers. Due to possible impacts on the remaining customers in the G.S.S. class, we are reluctant to implement significant rate design changes without more complete information. Therefore, we find that for the interim case, the existing rate design for the G.S.S. class shall continue and the rate levels increased proportionally. We also direct KCPL to gather demand data on the remaining G.S.S. customers to be available for the permanent case.

10. We have considered KCPL's contention that its 80 percent ratchet and 3.25 cents per KWH tail block encourages off peak usage and discourages an increase in the summer peak relative to staff's proposed 70 percent ratchet and higher energy rate in the tail block. However, as indicated earlier, lowering most customers' winter billing demand (lowering ratchet to 70%) will shift more KWH to the lower energy tail blocks, thus providing an incentive to increase non summer months' usage.

11. We direct that general service large tariff be restructured using a 70 percent ratchet but that the tail energy block rate remain unchanged. We believe no change is appropriate in the tail block rate at this time. In addition, the company's proposal to reduce winter demand readings 30 percent will be adopted. We believe that this rate design is most reasonable for general service large customers at this time.

Primary Service, Frozen and Large

1. KCPL requested no charge in the primary service *frozen* rate structure, other than a proportionate increase. However, KCPL proposed to restructure the primary service *large* rate schedule in the same manner as its proposed general service tariff. Staff redesigned both the primary service frozen and the primary service large schedules reflecting the same philosophy used in designing staff's proposed general service large tariff.

2. We find that primary service customers (both the frozen class and the large class) consist of high use, relatively high load factor customers. We have modified staff's proposal regarding the structure of the general service large tariff, and accordingly we adopt a similar modified proposal for the primary classes.

Residential Service

1. KCPL proposes no change in the residential rate structure. Presently, all residential class customer charges are the same level, except the residential demand service (RDS) which has a slightly lower customer charge. Staff witness Ford testified that a cost based customer charge for the residential customer class would be $7.13 per month, including meter costs and expenses for meter reading and customer billing. Customer charges would need to be increased 45 percent to reach this level, thus Mr. Ford proposed the same percent increase in these charges as the residential class would receive. He also recommended that the RDS customer charge be raised to the same level as the other residential class customer charges. KCPL witness Giles recommended a lower customer charge and lower energy rate for the RDS schedule. He testified this rate was designed so that a customer that does change his pattern of usage should be indifferent to the choice of RDS or residential rate schedule. (TR. Vol. A-3, p. 608).

2. We consider a proportionate increase in the residential class customer charge appropriate at this time given the impact of a higher increase. We also direct that the RDS customer charge be raised to the same level as the other residential class customer charges. All other rate components in the residential class except the electric space heat rate shall be increased proportionately.

Street Lighting

KCPL proposes that high pressure sodium lamps (HPS) and mercury vapor lamps (MV) be comparably priced based on lumens. Private area lights are structured in the same manner. KCPL increased this rate structure 10 percent for the private area lights. All other lighting class rates were increased proportionally. Staff did not oppose KCPL's recommended restructuring with one exception: staff proposed twin lamps be calculated at one and one half the single lamp rate. Staff reasoned that only one line and pole is required to serve the lamps, thus it does not cost twice as much to serve a two lamp pole as a one lamp pole. We adopt KCPL's proposed restructuring with the one exception proposed by staff.

Rate Area Combination

KCPL proposes to eliminate rate differentials between areas 2 and 4. Most of the parts of the tariffs are identical, and the few changes that are necessary will not greatly impact the customers. Therefore we adopt KCPL's proposal to combine rate areas 2 and 4 into a single tariff.

Spread of Increase

KCPL proposed an approximate equal percentage increase each rate schedule with the exception of General Service-Small, General Service-Large, Primary Service, Area Light, Street Light and Tariff Signal schedules. As

shown in Mr. Marker's appendix to his testimony, all classes are showing positive rates of return using either a 4 C.P. or a 12 C.P. allocation methodology. The lighting class shows a significantly higher rate of return under either methodology. Staff did not take issue with the spread of the increase as proposed by KCPL. We find the methodology as proposed by KCPL, shall be used in spreading the revenue increase to the various customer classes.

Other Tariffs

KCPL has various other rate schedules that were not specifically mentioned above. KCPL proposed no change in the rate structure of these tariffs and proposed a proportionate increase for these tariffs. Staff did not oppose these proposals. We adopt KCPL's proposals in this area.

ECA Tariff

KCPL proposed to reduce the ECA base from 1.772 cents per KWH to 1.409 cents per KWH to reflect the change in fuel costs as a result of Wolf Creek. Staff analyzed the proposed ECA base and found it to be mathematically correct. Therefore, an ECA base of 1.409 cents will be adopted. KCPL did not propose any revisions to the ECA tariff with respect to line loss limits, thermal efficiency and fuel mix limits with alternative fuel ratios as a result of Wolf Creek becoming operational. These changes were necessary, and we direct KCPL to reflect the above mentioned changes in the compliance filing. Since there was limited evidence in the record to support the ECA tariff revisions, they will be approved subject to a hearing in order to give all Wolf Creek participants an opportunity to present their proposals.

Rural/Urban Rate Differential

The Commission has some concern regarding the present poor economic situation of the farmers and how that may

be exacerbated by the rural residential rate which is .81 cents per KWH higher than the urban residential rate. We believe that this rate differential should be reduced .40 cents per KWH in view of the fact that most residential rates are at the same level. Further, we advise KCPL and the staff that this issue should be evaluated and addressed in the permanent rate base.

IT IS, THEREFORE, BY THE COMMISSION ORDERED THAT:

1. Applicant is a public utility subject to the jurisdiction of this Commission under K.S.A. 66-117, which empowers the Commission to permit and authorize changes in Applicant's rates, charges and conditions of providing retail sale of electricity;

2. Applicant's existing rates for its electric service applicable to its Kansas jurisdictional operations will not permit applicant to earn a fair and reasonable return on its investment devoted to such service;

3. Each specific finding of fact made above is hereby adopted as an ultimate finding and conclusion of law by this Commission;

4. KCPL's application is hereby granted in part and denied in part, and the Commission authorizes and orders applicant to file rates and tariffs to produce additional gross revenue in the amount of $25,103,000, as calculated in the Appendix attached to this order, in accordance with the findings of the Commission;

5. Rates resulting from authorized revisions, as herein directed, will be fair, just, reasonable and sufficient and will not be unduly discriminatory or unduly preferential so that the same may be accepted upon their filing without formal objection by staff: said authorized new rates and charges shall be effective on sales rendered on or after approval by the Commission of the revised tariffs.

6. Applicant is further ordered to comply with all the Commission's directives and orders set forth herein.

Dated: September 27, 1985

Lennen, Chmn.; Wright, Com.; Henley, Com.

/s/ Judith McConnell
JUDITH MCCONNELL
Executive Secretary

LCD:rh

APPENDIX A

June 4, 1985
Wichita, Kansas
9:00 A.M.

Laurence Holmes
R. S. Townsley
Donna Hinderliter
Bill Fox
Joel Heller
Lester E. Davis
Ralph Nutter
W. W. Graber
Rosie Teague
Margaret W. Bangs
Margaret J. Miller
Brian Christinat
M. J. Wall
Jenny Ablah
Kathryn Brito
Lois Tripplett
Lois Koon
Ralph Krehbiel
Charles Schrufer
Lee Good
Mark Zavala
William A. Garrison
Mel Brito
Iona Nutter
Sam Arnholz
Albert Rollman
Karen Fitzgerald Jacobs

June 4, 1985
Wichita, Kansas
1:00 P.M.

James A. Ray
Mary Margaret Rogers
Arnold Fisher
Nancy Winters
Sherman Whitley
Kirk Riley
Lyle English
Duane Sanders
Roberta Mildfelt
Anthony Tarauglla
Vern Pratt
Theo Cribbs
George Iseminger
Cynthia Perry
Pat Moore
Cecil Spurgeon
Andrea Potts
Beverly Brown
Harold Plenart
Marj Kraus
Lowell Klein

June 4, 1985
Wichita, Kansas
7:00 P.M.

Andy Allen
Evelyn Hendrickson
Richard Harper
Charles Bayouth, Sr.
Samuel Ellerman
Pat Lehman
Jeannette Ewat
Richard Harris
Teri Fresna
Alan Eshbaugh
John Livengood
Esther Francis
Willard Shopenberger
Terry Garrison
Jacque LeNai
Marla Pruett
Marlene Denny
Jerry McCarter
Eric Fowler
J. Mart Cockerill
Leroy Lehman
Greta Crosby
Darrell Glamann, Sr.
Arthur Gould
Howard Lane
Richard Cowdry
Amilia Newberry
Junior A. Weller

June 5, 1985
Wichita, Kansas
9:00 A.M.

Edmund Lorenz
Neila Nelson
Alvin McClelland
Carlene Farthing
Bob Laughlin
Ben Linn
Rick Bowden
U. A. Lawrence
Lawrence Hill
Ray Casados
John Harnburda
William Stephan
James Donnell
Dale Smith
Vernon Rice
Elvest Lehl
Lucile Cook
George Collier
C. Duane Pieplow
Lloyd Striplin
James Ard
Fred Godesky
Euel White
Jess Windsor
W. C. Helderman
Robert Crosby
Paul Miller
Charles Kerschen
Aileen Ward
Richard Walter
Jack Kice

June 5, 1985
Wichita, Kansas
1:00 P.M.

Rogert Grund
Greg Ferris
Ms. Hagins
Deborah Spence
Walter Groves
Diane Valadez
Alec Odeuseff
Myra White
James Clark
Robert Handley
Amber Mills
Mike Sawyer
Marie Groebl
Randy Hershey
Reverend D. Miller
Dick Merkel
George Gird
Joyce Hall
Robert McElroy
Atha Moore
Herman Korte
Orin Lewis
Collette Ayers
Ernie Clark
George Bayouth
Bill Burns
Mary Abbott-Mills
Nancy Moyer
Don Travis
Jerry Baker
Vee Williams
Henry Stockwell
John Mitchell
Math Loehr
Leonard Cook
Danny Mayes
Walter Berry
Tom Lawless
Daryl Gomann
Marvin Cupps
Mrs. Darel Manning
Seybrun Lahrom
Glendora Johnson
Betty Plummer
James M. Saiz
Vincent Moore

June 5, 1985
Wichita, Kansas
7:00 P.M.

Mike Tuttle
Sylvia Wilcox
Dennis Fairbanks
Powell Yew
Gladys Newman
Barbara Olmsted
Peggy Twombly
F. E. Johnson
Camilla Swart
Carl R. Wilmoth
Steve Dechant
Ron Norgren
Charles Pike
Chuck Mills
Chuck Scarbrough
Shannon Sherwood
Frank Kerns
Don Vaughn
Michael Moore
Wayne Cupps
Eric Dyer
Lucy Baker
Theresa Prockish
Roy Philips
Eric Wolfe
James Bell
Gary Knepp
Richard Aldrich

Michael Lynn
Debby Moore
Alice Lofland
Donald Snyder
George R. Barte, Jr.
Donald Krummer
Retta Christey
Cindy Chalker
Thomas Kneil
Kelly Wendeln
David Bayouth
Elizabeth Illidge
Dorothy Foster
Alice Seaman
Edna Johnson
Pam Robinson
Carl Houchin
Margaret Knepper
Carol-Lyn Gaudio
Paul Becker
Judy Cameron
Martin Cook
A. J. Hawkins
Phillip Dosien
Luther Steele
Noon Nulan
Erwin Duerksen
Jerry Lawrence

June 6, 1985
Lindsborg, Kansas
1:00 P.M.

Timothy Clanton
Eugene K. Nelson
Nadine Griffin
Sue Christensen
Paul Krumm
Weeden Nichols
Margaret Ayers

Walter Pickett
Enid Stover
Paul F. Burmeister
LeLain Lorenzen
James F. Schmidt
Gerald F. Ridenour
Irva Brandt

June 6, 1985
Newton, Kansas
7:30 P.M.

James D. Rutschman	Christina Jost
Ron Ewart	Frank Little
Alvin P. Voth	Ralph Garrison
Harold Schultz	Gret Bartel
Wilbur Robinson	Lou Jenson
M. R. Schroeder	Maynard Janzen
Duane Carmichael	Elmer Schmidt
Mrs. R. C. Classen	Stan Adamson
Billy Miller	James Nichols
Joyce DuFriend	Lloyd D. Pitchford
Keith Wiens	Mary J. Lehman
Paul Vaughn	Arnold E. Funk
Herb Reimere	Loren D. Reusser
Sylvia Cowley	Raymond Brant

June 7, 1985
Meade, Kansas
1:00 P.M.

Roy Seybert	Dean Borth
Larry Beard	Don Dowell
Marcia Eads	Karen Cottrell
Gred Borth	Melvin Neufeld
Jay Kirk Cottrel	Dave Geist
Duane Eads	Gloria McKinney
Frances Gates	Ray Charles

June 7, 1985
ElDorado, Kansas
7:00 P.M.

Jarett Molen	A. Martin Millard
Dana McCoy	John Cameron
Mac Burnham	W. L. Reeves
Joe Marcum	Joe Taggart
David Wilson	Mike Tuttle
Robert M. Green	R. A. Voisin
Max Corbin	Ted Baker
Wilber C. Reed	Harlan Seeber
Eldon Phares	Gene White
Judy Lawrence	Frank W. Strait
Fred Silver	Linda Richards
Maryon Payne	Tom Harms
Paul A. Boyer	LeRoy Hildreth
George Lawson	Jean Kanausman
Margie Hayes	M. C. Canfield
Paul Seely, Jr.	Eldon Phares
Robert McCord	

June 10, 1985
Topeka, Kansas
7:00 P.M.

Carl Jarrett
Phil Kassebaum
Ralph Turner
Paul Johnson

June 11, 1985
Paola, Kansas
7:00 P.M.

Virgil Thomas
Glen J. Underwood
Mrs. German
William C. Lawrence
Marvin Barkis
Mr. Doudna
Father Robert Pol
Edward L. Samyn
Dave Slyter
Harold Hendrickson
William Dokos
Darold J. Hendrickson
Mr. Kern

June 12, 1985
Pittsburg, Kansas
7:00 P.M.

Robert Lyerla
Albert Kozjeb
Renee Willingham
John Kozuh
Jim Engler
Lynda Pinegar
Chuck Kallaus
Ralph Wright
Sam Roper
John McNeill
Rod Dutton
Morris Stevens
Augusta Rua
Leo Merando
Edward Gallup
Bob Rinehart
Dick Lipka
Flossie Perkins
Lanthon Camblin
Ramiro Alvarez
Adal Bartletti
G. A. Oehme
Jim Loeffler, Jr.
Robert Moore
Patrick Knapp
Sherry Dennis
Dave Louiselle
Vince Scimeca
John Hannah
Winona Smith
Don Ward
Dick Loffswold
Rev. Conrad Ide
Wendell Burg
George W. Clark
Elmer Smith
Rick Lindsbog
M. J. Hefferman
James Armstrong, M.D.
Don Prettyman
Joni Raffel
Julie Bartletti
Steve Bitner
James Keeyan
Cindy Pucci
Jonas Ascauin
M. Lee Caldwell
Charles Dugone
Lou Davies
Ray Green
Thomas J. LeClere
Mari Peterson
Randall Palmer
Tom Boone
Gladys Thornburg
Jim Call
Larry Vanderpool
Bertha Dechairo
Charles Sesher
James Ascanio
Sandra Matfield
Joe Raffel
Paul Gravemann

June 13, 1985
Overland Park, Kansas
9:00 A.M.

Robert Runnels
Sally Farenthold
John Eilert
Bonnie Lankford
Ed Lackman
Mary Stewart
Robert Buenning
Diane Teglmeir
Hugh Bellas

June 13, 1985
Overland Park, Kansas
1:00 P.M.

Ed Eilert
A. E. Martens
Ray Miller
Olin Church
Stephen Fracul
Richard Wilms
Harold Davidson
Gene Haun
Walter Gates

June 13, 1985
Overland Park, Kansas
7:00 P.M.

Robert VanCrum
Genr Amos
Neil Rimington
Wayne Ricketts
Wilma McAmaw
Tom Caralijo
Claire Ewert
Dr. Stacy Ollar
Steven Eberlein
Mr. Thomas
Anne Nees
Mrs. Hall
Clarence Arndt
Bill Russell
Ed Stevenson
Rev. Dale Parson
Josie Riner
Al Frisby
James Firth
Richard Kaufman
Ron Rioner
Nady Currier
Floyd Lytle
Kal Makela
William Clark
Chris Martin
Roger Thomas
Rep. Vince Snowbarger
Mr. Holtzman

June 18, 1985
Iola, Kansas
7:00 P.M.

Harold Williams
Solomon Evans
Eugene Leedy
Mary Ellen Salava
Herbert Smith
John Noonan
Art Solomon
Richard Prother
James Walters
J. B. King
Russell Otto
Albert Winn

June 19, 1985
Independence, Kansas
7:00 P.M.

Frank McCabe
James Gilmore
John Barnes
Lawrence Stanley
Vernon Wint
Dr. William Hall
Robert Boyer
A. P. Wildgrube
Scott Smith
Terry Brown
James Bryan
Charles Daneke
Lucinda Sharman
Boyd King
Jean Smith
David Maugane
Iuan Fail
Helen Wildgrube
Ida Schafer
N. Cutshell
Earl Mundy
Carl Clark
Orville Austin
John Vermillion
Joe Smith
Gary Davidson
Kathy Travis
Warren Satchez
Mollie Stewart

June 20, 1985
Beloit, Kansas
7:00 P.M.

Gene Meitler
Jim Bigham
Vivian Almon
Robert L. Brown
Garland Price
Tom Hofts
Max Oharro
Jim Gouldie
Kenneth J. Maginley
Roger Nelson
Wayne Pachta Cubaks
Clyde Thomas
Raymond James (C&W)

APPENDIX B

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
5-13	1	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-14	2	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-15	3	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-16	4	Huston	KGE/KCPL	W.C. Management and Cost Prudence	
5-17	5	Aikman	KGE/KCPL	W.C. Depreciation	
-		LaGuardia	KGE/KCPL	W.C. Decommissioning Expense	
-		Brown	KGE/KCPL	W.C. O&M	
5-20	6	Hagan	KGE/KCPL	Nuclear Fuel Expense Licensing Status	
-		Roen	KGE	W.C. History/Mgmt. Prudence	
5-21	7	Roen	KGE	W.C. History/Mgmt. Prudence	
5-22	8	Roen	KGE	W.C. History/Mgmt. Prudence	
-		Andrews	KGE	Industry Comparisons	

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
5-23	9	Andrews	KGE	Industry Comparisons	
-		Cadman	KGE	Management Prudence	
5-24	10	Cadman	KGE	Management Prudence	
5-25	11	Cadman	KGE	Management Prudence	
-		Ferraro	KGE	Economic Impact	
5-28	12	Lucas	KGE	KGE System Operation	
-		Gayoso	KGE	Decommissioning Cost Recovery	
-		Branca	KCPL	W.C. at Wholesale	
-		Crawford	KCPL	Nuclear Fuel and Waste Disposal	
-		Peck	KCPL	KCPL's W.C. Audits	
-		Liberda	KCPL	Decommissioning Cost Recovery	
-		Morrow	KCPL	Nuclear Insurance	
5-29	13	Doyle	KCPL	Management Prudence	
5-30	14	McPhee	KCPL	Project History Management Prudence	
-		Evans	KCPL	System Operation with W.C.	
5-31	15	Evans	KCPL	System Operation with W.C.	
-		Limmer	KCPL	Capacity Reserves	

-		Cagnetta	KCPL	Unit Accreditation
6-1	16	Sullivan	KCPL	Rate Comparisons
-		Knodel	KCPL	Forecasting
-		Daicoff	KCPL	Economic Impact
6-10	17	Flaherty	Staff	Project Prudence
-		Mitchell	Staff	Project Prudence
6-11	18	Mitchell	Staff	Project Prudence
-		Yates	Staff	W.C. O&M
-		Mosher	Staff	W.C. Depreciation Rate
-		Ponce deLeon	Staff	Schedule and Direct Labor Disallowance
6-12	19	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
-		Mitchell	Staff	Project Prudence
6-14	20	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
6-15	21	Ponce deLeon	Staff	Schedule, and Direct Labor Disallowance
-		Nichols	Staff	Forecasting
6-17	22	Nichols	Staff	Forecasting
-		Talbot	Staff	Decommissioning Cost and Cost Recovery
6-18	23	Rosen	Staff	W.C. Cancellation, Economic Benefit
6-19	24	Rosen	Staff	W.C. Cancellation, Economic Benefit

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
6-20	25	Rosen	Staff	W.C. Cancellation, Economic Benefit	
6-21	26	Eaton	E.S.C.	Forecasting	
-		Sturgeon	E.S.C.	Need for Power, Prudence	
6-22	27	Phillips	KGE/KCPL	Regulatory Standards	Rosen Sturgeon
-		Fitzpatrick	KGE/KCPL	W.C. Cancellation, Economic Benefit, Forecasting	Rosen, Nichols, Eaton
6-24	28	Limmer	KGE/KCPL	Capacity Reserve Margin	Rosen
-		Fitzpatrick	KGE/KCPL	W.C. Cancellation Economic Benefit Forecasting	Rosen, Nichols, Eaton
6-25	29	Meyers	KGE/KCPL	Capital Additions	Rosen
-		Roen	KGE	W.C. Cancellation	Rosen
-		Backus	KGE	W.C. Cancellation	Rosen
6-26	30	LaGuardia	KGE/KCPL	Decommissioning Expense	Talbot Rosen
-		Brown	KGE/KCPL	Project Performance, Management, Preplanning and Industry Comparisons	Touche Ross
-		Springer	KGE/KCPL	Schedule	Ponce deLeon
-		Petrick	KGE/KCPL	SNUPPS/NPI	Touche Ross

6-27	31	Huston	KGE/KCPL	Schedule	Ponce deLeon Touche Ross
-		Van Nort	KGE/KCPL	Daniel Personnel, Quality	Touche Ross
6-28	32	Fairchild	KGE/KCPL	Industry Comparison, Economy of Scale	Rosen
-		Ferraro	KGE	Industry Comparisons of Cost and Schedule	Rosen Ponce deLeon
-		Wadsworth	KGE	(excluded)	—
6-29	33	Linderman	KGE/KCPL	Direct Labor Cost	Ponce deLeon
7-1	34	Komonoff	ALERT	W.C. Cancellation, Prudence	
-		Wass	KGE	Management Prudence '80 CMP Report	Touche Ross
7-2	35	Wass	KGE	Management Prudence '80 CMP Report	Touch Ross
-		Fouts	KGE/KCPL	Direct Labor Costs Construction Management Prudence	Ponce deLeon Touche Ross
7-3	36	Fouts	KGE/KCPL	Direct Labor Costs Construction Management Prudence	Ponce deLeon Touche Ross
-		Marks	KCPL	Forecasting	Nichols
-		Branca	KCPL	W.C. Cancellation	Rosen
-		Knodel	KCPL	Forecasting	Nichols Eaton

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
7-6	37	DeStefano	KCPL	Schedule	Rosen
-		Rodabaugh	KCPL	Nuclear Fuel Expense	
-		Beaudoin	KCPL	Rate of Return	
7-8	38	Evans	KCPL	Cancellation, System Operation with Wolf Creek	Rosen Sturgeon
7-19	39	Linderman	KG&E	Reconciliation	Ponce deLeon
7-8	A-2	Rasmussen	KCPL	Phase In	
-		Pendleton	KCPL	Phase In	
-		Johnson	KCPL	Environmental	
-		Wasson	KCPL	ECA Items, M&S Inventory	
-		Miller	KCPL	Ice Storm Expense	
-		Samuels (Stip.)	KCPL	Fuel and Interchange Budgets	
-		Blunk (Stip.)	KCPL	Forecast Fossil Fuel Prices	
-		Chronister (Stip.)	KCPL	EPRI	
7-9	A-3	Landes	KCPL	EEI	
-		Bauer	KCPL	EEI	
-		Levesque	KCPL	Corporate Planning Process and Budgeting	

-		Yetter	KCPL	Budget and Reconciliation	
-		Sullivan	KCPL	Allocations	
-		Knodel	KCPL	Allocations, Customer Class Cost of Service, Rate Design (Space Heating)	
-		Giles	KCPL	Rate Design, (Street Lights, Area Lights, RDS), Revenues	
-		Cattron	KCPL	Test Year, Accounting Adjustments	
-		Yates	Staff	Budget	
-		McCoy (Stip.)	KCPL	Fossil Fuel Inventory	
-		Kite (Stip.)	KCPL	Allocations	
-		Proctor	Staff	Accounting Adjustments	
7-10	A-4	Sharpe (Direct & Rebut.)	KCPL	Taxes Interest Sync.	Proctor
-		LaCapra	KCPL	Allocations	
-		Proctor	Staff	Accounting Adjustments	
-		York	Staff	Rate of Return	
-		Marker	Staff	Allocations	
-		Ford	Staff	Rate Design	
-		Cobler	A.G.	Rate Impact	

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
-		Armstrong	Staff	FASB 71	
-		Smith (Stip.)	KCPL	Non-W.C. Management Prudence	
7-11	A-5	Talbot	Staff	Financial Impact on KCPL	
-		Beaudoin	KCPL	Rate of Return, Financial Impact	York Talbot
-		S. Johnson	KPL	Rate Design (Heating Rate)	
-		Levesque	KCPL	Forecast Test Year, Budget, Interim Rates	Yates
-		Yetter	KCPL	H 1-4 Common Costs, Payroll	Proctor
-		Cattron	KCPL	W.C. Ad Valorem Taxes, H 1-4 Common Facilities and Structures	Proctor
-		Sullivan	KCPL	Allocations	Marker
-		Blunk (Stip.)	KCPL	Modeling, Forecast Fuel Prices	Proctor
7-12	A-6	Tolley	Jo.Co.	Economic Impact	
-		Pflaum	JoCo.	Phase-In	
-		Rasmussen	KCPL	Phase-In	Pflaum, Armstrong Talbot

-		Pendleton	KCPL	Phase-In	Armstrong, Pflaum
-		Knodel	KCPL	Forecasting, Rate Design (Space Heating Rate), Statistical Modeling, "Price Path" for Phase-In	Tolley Ford S. Johnson Proctor, Pflaum
7-15	A-7	Lanzalotta	Jo.Co.	Excess Capacity	
-		Russell	Jo.Co.	Operating Problems Due to Excess Capacity, Off-System Sales Treatment in BCA, Target Capacity Factor, Mandatory Unit Commitment Coordination	
-		Turner (Stip.)	Electro	Rate Impact	
7-15	A-7	Knudson	Thermo	Rate Impact, Rate Design	
-		Pauley	Staff	Unit Performance Commitments, Retirements and Dispatch	
-		Giles	KCPL	GS Rate Schedules, W.C. Target Capacity Factor for BCA	Ford Russell

Date	Tr. Vol.	Witness	Sponsoring Party	Issue	Rebutting
-		Evans	KCPL	Unit Performance, H 1-4 and GAS, System Operation with W.C., Excess Capacity, W.C. Target Capacity Factor	Pauley, Lanzalotta, Russell
-		Trask	KCPL	H 1-4 and GAS, System Operation After W.C., Unit Maintenance Scheduling, Common Facilities	Lanzalotta, Russell, Pauley Proctor
-		Branca	KCPL	Excess Capacity, Unit Accreditation, Voltage Support	Russell Lanzalotta Pauley
-		Dermann	KCPL	Load Control Program (Excess Capacity)	Lanzalotta
-		Limmer (Stip.)	KCPL	Capacity Reserve	Lanzalotta

APPENDIX C

KANSAS CITY POWER AND LIGHT CO.

Docket No. 142,099-U

Kansas Retail Revenue Deficiency

	$000's
Rate Base as Adopted	409,958
Overall Return on Rate Base	11.236%
	46,063
Return on Load Control Equipment	7
Net Operating Income Required	46,070
Net Operating Income Adjusted	29,099
Net Operating Income Deficiency	16,971
Income Tax Factor	.50355
Revenue Deficiency	33,703
Nuclear Fuel Savings	8,600
Revenue Deficiency in Current Rates	25,103

APPENDIX C

KANSAS CITY POWER AND LIGHT CO.

Docket No. 142,099-U

Kansas Retail Electric Rate Base

	($000's)
Rate Base per Applicant	724,303
Staff Adjustments accepted by Commission:	
No. 1 Staff Allocation Change	(30,710)
No. 2 Customer Related Capital	52,879
No. 3 PMA-Nuclear Plant	(39,606)
No. 4 Hawthorn Retirement	0
No. 5 Nuclear Plant Depreciation Rate Change	340
No. 6 Montrose Transmission Plant	(203)
No. 8 LaCygne Turbine Plant	(168)
No. 9 Net Cash Working Capital	4,055
Rate Base with Staff Adjustments	710,890
Commission Adjustments to Rate Base	
No. 10 Excess Capacity	(228,060)
No. 11 Economic Revaluation of Nuclear Plant	(72,872)
Rate Based as Adopted	409,958

APPENDIX C

KANSAS CITY POWER AND LIGHT CO.

Docket No. 142,099-U

Kansas Retail Operating Income

	($000's)
Operating Income per Applicant	33,732
Staff Adjustments Accepted by Commission:	
No. 1 Staff Allocation Change	945
No. 2 Wolf Creek Expenses	89
No. 3 Decommissioning Costs	(253)
No. 4 Nuclear Plant Depreciation Rate Change	726
No. 5 PMA-Depreciation on Excluded Nuclear Plant	1,525
No. 6 Property Tax on PMA Exclusion	252
No. 7 Operation and Maintenance for Hawthorn Plant Requirements	1,214
No. 8 Depreciation for Excluded Montrose Plant	4
No. 9 Labor Adjustment	1,520
No. 10 Adjust Current and Deferred Income Taxes to Reflect the Effect of Other Staff Adjustment to Operations	(10,655)
Total Staff Adjustments	(4,633)
Operating Income as Adopted	29,099

APPENDIX G

Order Denying Rehearing (KCPL)

THE STATE CORPORATION COMMISSION OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman;
Margalee Wright and
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGTON, KANSAS

Docket No. 142,099-U
84-KCPE-198-R

IN THE MATTER OF THE APPLICATION OF KANSAS CITY POWER & LIGHT COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

ORDER DENYING REHEARING

Now, the above-captioned matters come before the State Corporation Commission of the State of Kansas upon the Application for Rehearing filed by Kansas City Power & Light Company (KCPL), and the Application of the Johnson County Joint Intervenors for rehearing.

The Applications for Rehearing were scheduled for oral argument along with the Applications for Rehearing of the other owners and intervenors in the Wolf Creek related dockets. Applicant, KG&E, appeared by James

Haines and Jonathan Heller, Wichita, Kansas. Applicant, KCPL, appeared by Warren B. Wood, Overland Park, Kansas, and Lowell L. Smithson, Spencer, Fane, Britt and Browne, Kansas City, Missouri. Applicant, KEPCo, appeared by Clifford L. Bertholf, and Phillip Kassebaum, Wichita, Kansas. Applicant, Hospital and Industrial Intervenors, appeared by Thomas M. Van Cleave, Jr., McAnany, Van Cleave & Phillips, Prairie Village, Kansas, and Robert C. Johnson, and George Pond, Peper, Martin, Jensen, Maichel and Hetlage, St. Louis, Missouri. Applicant, Vulcan Materials Company, Chemical Division, appeared by Milo M. Unruh, Sr. and Milo M. Unruh, Jr., Arn, Mullins, Unruh, Kuhn & Wilson, Wichita, Kansas. Intervenor, Alliance for Liveable Electric Rates Today, ALERT, appeared by Robert V. Eye, Irigonegaray, Eye & Florez, Topeka, Kansas. Intervenor, Mary Margaret Rogers, appeared by Patrick H. Donahue and William Riggins, Kansas Legal Services, Topeka, Kansas. The Honorable Robert T. Stephan, Attorney General of the State of Kansas, appeared by Carl M. Anderson, Assistant Attorney General, Topeka, Kansas. The Commission staff and the public generally were represented by Brian J. Moline, General Counsel, Robert M. Fillmore, Deputy General Counsel, LuAnn C. Dixon, Assistant General Counsel, John Jay Rosacker, Assistant General Counsel, and Donald A. Low, Director of Utilities, Topeka, Kansas.

The Commission, being fully advised in the premises and having given due consideration to the oral arguments of the parties, finds and concludes as follows:

1. The final order was issued herein on September 27, 1985, pursuant to K.S.A. 66-117. That order was fully responsive to KCPL's application for changes in its charges for electric service, filed November 8, 1984 and amended January 31, 1985.

2. The Commission received KCPL's Application for Rehearing on October 7, 1985. The Commission also

received on October 7, 1985, the application of the Johnson County Joint Intervenors for rehearing. Both applications were timely filed in accordance with K.S.A. 66-118 (b).

3. By order issued October 17, 1985, the Commission required oral argument on certain issues with no time limit, and permitted oral argument on the remainder of the issues raised in the Applications for Rehearing subject to a 20 minute time limitation. In that order, the Commission also continued the Applications for Rehearing for 30 days from October 17, 1985, pursuant to K.S.A. 66-118b.

4. The Commission heard oral argument regarding the Applications for Rehearing on Friday, November 8, 1985, beginning at 8:30 a.m., in the Commission's Hearing Room B, Fourth Floor, State Office Building, as scheduled.

5. The Commission, after reviewing its September 27, 1985 order issued herein, finds that the order language at page 40, line 2, regarding PMA finding a 27 month difference in schedule duration to the point of fuel load, is incorrect. The Commission directs that the number "27" in that sentence be changed to read "29" pursuant to the evidence in Exhibit G-Staff-77, Schedule Report, pages 1, 50. Further, at page 103 regarding depreciation rates for Wolf Creek, that order reads "annual interim retirements of 12 percent." That phrase should read "annual interim retirements of 0.2 percent," to correspond to the testimony of witness Mosher, TR. Vol. XVIII, p. 5253, 1, 8. These corrections concern typographical errors in the Commission's order.

6. In further reviewing the record in Docket No. 120,924-U, the Commission finds that certain procedural matters must be resolved. In particular, the Commission deferred ruling on the admissibility of Exhibit G-Staff-170, a letter from Mr. Arterburn to Messrs. Fiebach,

Cadman and Koester. At this time, the Commission rules that Exhibit G-Staff-170 will not be admitted in evidence.

7. Also, on September 3, 1985, attorneys for intervenor, Mary Margaret Rogers, filed a post hearing brief accompanied by a Motion for an Enlargement of Time within which to file brief. The Commission grants this Motion and accepts the late filed brief of Mary Margaret Rogers in Docket No. 120,924-U.

8. KCPL argues that the Commission incorrectly reduced KCPL's nuclear fuel inventory when adjusting nuclear plant as excess capacity. The Commission notes that KCPL included its nuclear fuel inventory in nuclear plant investment; whereas KG&E, a joint owner of WCGS, included nuclear fuel inventory in working capital. Thus, the excess capacity adjustment to nuclear plant for KCPL excluded a proportionate amount of KCPL's nuclear fuel inventory, but the similar adjustment for KG&E had no effect on KG&E's nuclear fuel inventory. The Commission finds that no adjustment should be made to nuclear fuel inventory as part of WCGS excess capacity. We direct that KCPL refile its rates and tariffs to collect an additional $2.2 million in Kansas jurisdictional revenues to reflect this modification of our earlier order.

9. KCPL also argues that accumulated depreciation is overstated for the test year period. The Commission's order provides for entries of equal amounts to depreciation expense and accumulated depreciation. Yet plant in service for purposes of depreciation expense includes even that portion of plant determined to be excess capacity, while plant in service for purposes of accumulated depreciation should not include that portion of plant determined to be excess capacity. The Commission has considered the oral arguments on this issue and finds that the accumulated depreciation calculated pursuant to the September 27, 1985 order should be modified to reflect

the rate base approved by the Commision with adoption of the excess capacity adjustments. KCPL is directed to refile its rates and tariffs to collect an additional $892,000 in Kansas jurisdictional revenues to reflect this modification of our findings regarding accumulated depreciation.

10. The Commission has considered the arguments of counsel for KCPL that our decisions regarding excess capacity and the valuation of Wolf Creek are preempted by the Atomic Energy Act 42 USCA § 2011 et seq. because they unlawfully intrude into the federal government's exclusive concern for the safe development of nuclear power. We find these arguments contradictory to existing case law holding that the federal government's exclusive authority under the doctrine of preemption is limited to regulation of radiation hazards at nuclear power plants. In all other areas, dual federal and state regulation of public utilities is preserved. *Northern States Power Company v. State of Minnesota,* 447 F.2d 1143 (C.A. 8th Cir. 1971). *Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Commission,* 103 S.Ct. 1713 (1983).

11. The Commission allows the owners full recovery of their proposed Wolf Crek O&M expenses with the exception of the salary of one employee who is no longer there. In addition, the Commission allows a return of the plant investment found to be excess capacity. Thus, compliance with safety regulations should not be a financial problem for the owners. In addition, there is nothing in the statutes or in constitutional law that the federal government has a constitutional interest in how a utility obtains funding to comply with federal safety requirements regarding nuclear power plants. Our order does not act as a barrier to the federal objective to develop nuclear power. The federal government is concerned with the construction of safe nuclear power

plants, not with the construction of nuclear power plants at all costs.

12. KCPL's attorney has argued that our earlier order is inconsistent because we determined excess capacity for KCPL assuming a 1990 peak demand that was based on KCPL's requested price increases in Kansas and Missouri, yet we granted KCPL a lower than requested price increase in Kansas. KCPL asserts that because of the price elasticity of demand, this Commission's lower price increase will result in a higher than forecasted peak demand for KCPL. The Commission considers additional evidence regarding peak demand for 1990 to be very speculative. Our earlier order contemplates that there may be changes over the next few years in what constitutes KCPL's excess capacity. The owners of Wolf Creek may seek Commission approval to include more of Wolf Creek in rate base. The evidence in the record indicates that our projection for peak demand for the year 1990 is reasonable. We believe that KCPL's econometric model lacks the precision to measure short run changes in demand. It would be speculative to presume a substantial change in technology will occur, including housing and appliances, in the next five years of the magnitude suggested in Mr. Knodel's affidavit attached to KCPL's application for rehearing. We find from the evidence in the record that our load forecast for 1990 is reasonable, but we do not find the need to adopt the company's methodology. We affirm our earlier findings regarding KCPL's peak demand for the year 1990, as well as our finding regarding KCPL's near term excess capacity.

13. The Commission has considered counsel's arguments regarding costs disallowed due to imprudence. We have re-examined the evidence and our earlier findings, and we affirm our disallowance of $37,961,400 attributable to 1,828,262 manhours and $244,561,400 due to controllable schedule delay. We find these costs are

due to inefficiency or imprudence in the owners' management practices in the construction of Wolf Creek. This conclusion results from our analysis of the companion reports submitted by Touche Ross and PMA for the staff, as well as the owners' Management Performance Evaluation, Reconciliation Management Summary, and the testimony sponsored by Mr. Huston and Mr. Linderman. The staff reports analyzed the construction management practices and specific areas of cost overruns and schedule delay. We are not persuaded by the owners' reports regarding management performance and the reconciliation process, and the related testimony that all the construction costs were incurred prudently or efficiently. We also are not persuaded by the design change analysis sponsored by witness Huston that the owners have adequately explained the reasons for schedule extensions. On the contrary, the evidence in the record, including the reports prepared on behalf of the staff by PMA and Touche Ross and the cross-examinations of Mr. Huston and Mr. Linderman, supports our previous findings of costs disallowed due to imprudent or inefficient actions on the part of the owners.

14. Our findings regarding the cost disallowance are also consistent with the legislation in K.S.A. 66-128g (b):

> The portion of the cost of a plan or facility which exceeds 200% of the "original cost estimate" thereof shall be presumed to have been incurred due to a lack of prudence. The Commission may include any or all of the portion of cost in excess of 200% of the "original cost estimate" if the Commission finds by a preponderance of the evidence that such costs were prudently incurred.

15. We find pursuant to this standard that approximately $800,000,000 of the Wolf Creek cost is in excess of 200 percent of the original cost estimate. We cannot

find from the preponderance of the evidence in the record that all of the costs in excess of 200 percent of the definitive estimate were prudently incurred. We find that the owners failed to identify, quantify, explain or reconcile substantial increases in costs. Therefore, the owners have not met their burden imposed by the legislature of presenting substantial, competent evidence to the Commission that costs in excess of 200 percent of the original cost estimate were prudently incurred. As Mr. Linderman testified, it was not the purpose of the reconciliation process to analyze management prudence regarding construction of Wolf Creek. Furthermore, our examination of Mr. Huston's analysis and testimony regarding industry average comparisons does not lead us to the conclusion that all of the costs over 200 percent of the definitive estimate were prudently incurred. Comparison of management performance at Wolf Creek to a statistical average of several variables for other selected projects is a meaningless exercise absent evidence of management prudence at the projects being used as a standard. Such a comparison fails to prove that all of the construction costs at Wolf Creek were prudently incurred, or that management decisions at Wolf Creek were appropriate. On the other hand, examination of management performance at Wolf Creek reveals that inappropriate decisions and inefficient actions were present. We find no inconsistency in rejecting the owners' use of such industry statistics for determining overall performance, and adopting the use of an average unit rate to calculate a manhour factor in controllable schedule slippage. Unit rates for particular activities would be comparable throughout the industry. We affirm our earlier findings regarding the qualitative and quantitative analyses of Wolf Creek construction cost and schedule.

16. In its application for rehearing, KCPL made numerous contentions concerning the Commission's adop-

tion of risk sharing principles and the valuation of Wolf Creek at $1290/KW. Oral arguments were heard on the company's contentions that the Commission's order is unlawful, unreasonable and arbitrary in this regard. Among other points, the company argues that K.S.A. 66-128g, upon which the Commission relied, does not authorize consideration of economic and risk factors for valuation of rate base. The factors listed in that statute are argued to be intended only for use in making a prudence determination, after which plant investments should be valued at original cost. The company argues that since the Commission may only exercise authority delegated to it by the legislature, the valuation of Wolf Creek at less than original cost is beyond its authority and confiscatory.

17. The Commission has carefully considered its findings in light of Applicant's arguments and still believes its findings to be sound, reasonable and lawful. In our September 27, 1985 order we found that K.S.A. 66-128g "compels consideration of the economics of a plant in determining the reasonable value of a rate base addition". Although Applicant may be correct that that statute does not explicitly require consideration of the listed economic factors in determining valuation, we believe that the legislature did intend that those factors be considered in arriving at a fair and reasonable result. Furthermore, the inclusion of risks accepted by the utility as a factor in K.S.A. 66-128g, suggests some legislative recognition that utilities do accept risks for ratemaking purposes. Although that factor and eleven others may be primarily aimed at a prudence determination, we do not believe they are limited to that narrow purpose.

18. As staff noted in its argument, the Commission has broad authority under K.S.A. 66-101 to "do all things necessary and convenient for the exercise of . . . power, authority and jurisdiction" to supervise and control public utilities. The powers granted to the Commis-

sion are to be liberally construed pursuant to K.S.A. 66-141 and have been so construed by the courts. *E.g., Sunflower Pipeline Co. v. Kansas Corporation Commission*, 5 K.A.2d 715, 624 P.2d 466 (1980). This liberal construction is necessary to insure that utilities provide reasonably efficient and sufficient service pursuant to K.S.A. 66-107. Staff observes that risk sharing is not, in fact, a recent regulatory innovation, but that it has been embodied in many, if not most, actions taken by Commissions in a rate case. We believe staff is correct. It is often observed that regulation is a surrogate for competition and that the goal of regulation is to attempt to produce results similar to those which would be produced in the competitive marketplace. In our September order we noted that this analogy to the free marketplace has limitations, but certainly regulation can and does continually balance the interests of utility shareholders and ratepayers. This balancing occurs whenever a commission disallows a cost or expense, although it may actually have been incurred, because it is unreasonable to have ratepayers bear that cost or expense. Utilities, consequently, have always faced the risk that costs would be disallowed and that they would be ultimately borne by shareholders. Several specific examples illustrate that this has been recognized as a valid regulatory principle.

19. Staff noted that the Court in *Kansas Gas & Electric v. State Corporation Commission*, 218 Kan. 670, 544 P.2d 1396 (1976) quoted with approval the general principle of utility law that a utility company "must bear the burden of an unreasonable extension of its plant and the risk that portions of it prudently acquired may become obsolete, or not useful". It thus appears that assumption of risk was recognized as a valid concept by that court, at least with regard to physical excess capacity. It is, of course, that court decision which prompted passage of House Bill 2927 (K.S.A. 1984 Supp. 66-128 *et seq.*), which was apparently intended to broaden further this Commission's authority.

20. There are other traditional adjustments made by commissions which have the effect of limiting the amount of costs allowed for determining revenue requirements. For example, most commissions do not generally allow plant acquired from another utility to be included in rate base at an acquisition cost higher than original cost without a showing of benefits to ratepayers. *See e.g. Southwestern Bell Tel. Co. v. State Corporation Commission*, 192 Kan. 39, 67; 386 P.2d 515 (1963); *In Re Plateau Natural Gas Company*, 27 PUR 3d 447 (1959). Although the primary rationale for such disallowances is to prevent inflation in the value of property which was dedicated to public service at orignal historical cost, the broader purpose of interest here is to insure a reasonable and efficient valuation of property in rate base. It is obviously not economically efficient to permit an increased valuation in property simply due to a change in ownership accomplished by a purchase price in excess of original cost less depreciation.

21. Staff also cited *Sekan Electric Coop Ass'n. v. Kansas Corporation Commission* 4 K.A. 2d 477; 604 P.2d 188 (1980) in its arguments. The Court of Appeals in that case approved the use of a hypothetical capital structure quoting a treatise on utility regulation:

> It must be kept in mind, of course, that the regulatory commission does not have the actual authority to revise a utility's capital structure, per se, or to order the utility to change it into a different setup. That is a prerogative of management which cannot be superseded by the substitution of regulatory opininion-that is to say, how much debt should be incurred or common stock issued.
>
> It is solely in the area of assuming what effect a different or more desirable capital structure would have on the cost of capital, if it were adopted, that the regulatory judgment may function. As a practical matter, of course, such a hypothetical assump-

> tion of an ideal or optimum capital structure, as distinguished from that which actually exists, may have the same dollars-and-cents results, as far as the return allowance is concerned, as an actual change in the capital structure. In other words, the regulatory authority may say to the utility company, in effect: 'We find that if the debt to equity ratio were different from what it actually is, your capital costs would be lower, so therefore we will consider the cost of capital just as if the capital structure were different, in making the return allowance.'
>
> This distinction between the function of management and that of the regulator has been succinctly stated by the Maryland court of appeals in a recent decision [C.&P. Tel. Co. v. Public Service, 230 Md. 395, 187 A.2d 475 (1963)] wherein it was said that the owners and management of a utility have the right to determine what the debt-equity ratio should be, but they may not always make the ratepayers foot the bill resulting from the choice.
> 4 K.A. 2d at 480.

22. Use of a hypothetical capital structure thus appears to have been sanctioned by the Court as a means of having ratepayers pay only the costs associated with a more "desirable", "ideal", or "optimum" alternative as opposed to that "which actually exists." Our treatment of Wolf Creek, of course, is not an attempt to replicate precisely the results of an optimum situation, but merely that of a reasonable one. The Kansas court is not alone in approving the use of a hypothetical capital structure. In *Southern Bell Telephone and Telegraph Company v. Louisiana Public Service Commission*, 239 La. 175, 118 So. 2d 372, 32 PUR 3d 1 (1960), the Louisiana Supreme Court noted that the hypothetical capital structure "has been almost universally adopted in those states where there is no formula prescribed by constitutional provisions or statutes for determination of a rate base." 32

PUR 3d at 11. After citing some eighteen jurisdictions in which courts or commissions had adopted the approach, the Court quoted from a Connecticut Commission decision that:

> In common with other operating companies of the Bell System, the Southern New England Telephone Company has consistently attempted to maintain a low debt ratio. It is manifest that the realities of the federal corporation tax structure make such a low ratio an expensive luxury, which must be borne by the ratepayers. This is so because interest on debt securities is tax deductible, but dividends on stock are not so deductible. Consequently, a lower debt ratio requires higher revenues for servicing of the stock of the company. This commission recognizes the fact that debt financing requires less revenues from ratepayers than equity financing and concludes that ratepayers should not be penalized by management's decision to maintain an unduly low debt ratio.

23. These cases certainly illustrate the fact that regulatory commissions are not bound by utility management decisions when ratepayers would be unduly penalized by the results and that the commission may substitute, for ratemaking purposes, a hypothetical with more reasonable results.

24. In its argument, staff also cited several Commission decisions which held that shareholders should bear part of the costs of plants which had been cancelled or represented excess capacity. *In Re Otter Tail Power Company*, 44 PUR 4th 219 (1981); *In Re Carolina Power and Light Company*, 49 PUR 4th 188 (1982); *Pennsylvania Public Utility Commission v. Pennsylvania Power Co.*, 27 PUR 4th 426 (1978). Those Commission orders explicitly termed their decisions as adopting risk sharing principles, as have we. However, as discussed above, the Commission does not believe that the underlying concept

is new or novel. Risk sharing is simply one way of characterizing a means by which commissions fulfill their obligation to insure just and reasonable rates and sufficient and efficient service.

25. Although we conclude, therefore, that the Commission is legally empowered by its general statutory authority to adopt a risk sharing approach, we should also specifically address the company's contentions concerning K.S.A. 1984 Sup. 66-128g. As noted above, that statute was enacted as part of H.B. 2927, which was intended to broaden the Commission's authority to address excess capacity situations. Whether and how much that bill actually increased Commission authority may be arguable. It is clear, however, that that law gives an additional emphasis to economic efficiency in determining valuation of utility property. As previously noted, K.S.A. 1984 Supp. 66-128g, lists several economic factors for the Commission to consider. K.S.A. 1984 Supp. 66-128c also explicitly empowers the Commission, "in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, . . . to evaluate the *efficiency* or prudence of acquisition, construction or operating practices of that utility." (Emphasis added.) In accordance with that legislative direction, the Commission did consider economic efficiency of the Wolf Creek plant and the electric service it provides. We found that full rate base inclusion of the plant was not economically efficient and that the approach we took was necessary to insure reasonable rates. Consequently, we remain convinced that sharing of risks between ratepayers and shareholders by limiting return on a reasonable valuation of Wolf Creek is reasonable and within the Commission's authority.

26. It is interesting to note that Applicant has not suggested abuse of authority by the Commission in determining that the risk sharing principle should apply to the physical excess capacity findings as well as the economic excess findings. We found in our September order that risks were appropriately shared by not allowing a

return on both the physical and economic excess portions of Wolf Creek but allowing a return of those costs. K.S.A. 66-128c, of course, clearly allows the Commission to "exclude all or a portion" of excess capacity costs from the revenue requirements of a utility so that not only the return on those costs but also the return of those costs may be disallowed. Although such an alternative was available, the Commission believes that the approach taken is more appropriate. As reflected in the prior order, the Commission considered the concerns for fuel diversity which prompted construction of Wolf Creek in determining that return of the investment was appropriate. This, however, was premised on no return on that portion of Wolf Creek which exceeded a reasonable valuation since we believe that the risks to be shared involve both the amount and cost of capacity resulting from the generation facility.

27. The Commission's order setting the applications for rehearing for oral argument requested argument on whether the findings valuing Wolf Creek at coal plant costs were legally sufficient. The company contends that there was no support in the record to base a valuation on the cost of a coal plant. To the contrary, the method of comparing Wolf Creek costs to those of a coal plant was a basis for the owner utilities decisions to build and continue construction of Wolf Creek. For example, KGE and KCPL both performed at various times a levelized bus bar energy cost comparison for Wolf Creek and coal facilities. A series of such comparisons performed by KGE from 1976 to 1980 consisted of the levelized bus bar costs for nuclear and coal facilities for a ten year period. Although we discussed the deficiencies of the specific studies in our September order, the general concept of comparing nuclear and coal costs to determine their relative economics is sound.

28. In calculating the valuation of Wolf Creek, the Commission took an approach very similar to the levelized

bus bar analysis performed by the companies. Rather than translating the relevant costs to a figure per kilowatt hour, however, the Commission approach translated the costs into capital costs per kilowatt of capacity. Although this was not the precise methodology used by the companies, it cannot be contended that the Commission is bound to use only the exact methods contained in the testimony and exhibits. It is clear that the Commission may use its own judgment to determine a reasonable result. *See, Union Gas System, Inc. v. Kansas Corporation Commission*, 8 K.A. 2d 583, 663 P.2d 304 (1983).

29. In addition to the company studies, the record also contains the studies performed by staff witness Rosen and intervenor witness Komanoff, which were life cycle cost comparisons of nuclear and coal plants. As discussed in the September order, we chose not to rely on their specific studies due to the myriad of projections and assumptions required. It is interesting to note, however, that our approach results in a revenue requirement which falls within the range of that advocated by staff and the recommendation of witness Komanoff for inclusion in rate base of 7% of Wolf Creek. We also find it noteworthy that in this Commission's 1980 order granting a conditional certificate to KEPCo for purchase of a share of Wolf Creek, the Commission attempted to place a ceiling on the purchase price. That maximum was based on KEPCo's percentage share of the then estimated $1.5 billion Wolf Creek cost or approximately $1,300 per kilowatt. That estimate included the projected impacts of inflation on the final construction costs. That figure, we believe, compares favorably with the $1,290 figure we determined in September. Indeed, when this comparison came to our attention, we were pleased at the similarity of conclusions, considering the different contexts from which they arose. Any notion that the Commission is now engaged in "hindsight" regulation should be dispelled by the fact that the value we found reasonable for a prospective owner of Wolf Creek five years ago is remark-

ably close to the reasonable value determined in September. If it had come to the Commission's attention previously, we might well have used the $1300 per KW figure as an additional benchmark in this case. In any event, it reinforces our belief that $1290 is a reasonable figure.

30. Finally, the Commission requested argument on whether rehearing should be held to consider other methods for valuing Wolf Creek. The company opposed such a possibility. Staff argued that other methods such as avoided cost pricing or market rates could be considered which might result in even lower rates. Staff suggested, however, that this did not imply that the Commission decision was unreasonable. We agree that consideration of other approaches could result in a different result which might also be reasonable. We are, however, comfortable with our initial decision. As noted in the leading court case of *Power Comm'n v. Hope Gas Co.*, 320 U.S. 591, 602, 88 L.Ed. 333, 64 S Ct. 281 (1944), "[I]t is the result reached and not the method employed which is controlling. . . . It is not theory but the impact of the rate order which counts." We believe the result of our decision is just and reasonable.

31. One contention made by the company is that the determination of the $1,290/KW figure was not based on evidence in the record and was not set forth with mathematical precision so that no opportunity has been afforded to test the validity of the calculation. On oral argument KCPL did argue that its review of the calculations obtained from the Commission staff suggested that the generation cost savings determination was improper since it was only based on the first year of Wolf Creek operations. KCPL suggested that greater savings would occur subsequently and should be reflected in the Commission's determination.

32. Staff argued that the precise mathematical calculations need not be set out in the order any more than calculations of the other adjustments made or adopted by

the Commission. Staff also argues that it is appropriate to reflect only the current generation costs and that projecting future generation cost savings would amount to the life cycle analysis which the companies severely criticized when performed by staff witness Rosen.

33. The Commission believes that the calculations were adequately set forth in the September order but will spell out further details below. In addition, we see no significant deficiencies in the $1,150-$1,250 range of coal plant capital costs chosen from those contained in the record. As noted by staff, that range was not intended to replicate the capital costs which would have been incurred had Wolf Creek been cancelled nor what would have been the optimal capacity construction plan from the beginning. We are simply determining a reasonable value for a coal facility for purposes of setting rates for the immediate future. In this regard, the Commission is troubled that KCPL now suggests that the calculation of generation cost savings of Wolf Creek over a coal plant should include long-term projections. As noted above, our approach was adopted in part because of the companies' arguments that long-term life cycle analysis of the overall economics of Wolf Creek relative to coal facilities was too speculative. The near term approach we have taken has the benefit of not requiring the kinds of estimates KCPL now apparently suggests are desirable. We fail to see why long term estimates are appropriate for this calculation which will be subject to future adjustments and is not intended as a long-term cost analysis. Nor do we see merit in the argument that potential future adjustments in the $1,290 valuation are inadequate since they cannot apply retroactively. As noted in adopting our approach, one consideration was that of intergenerational equity. If, in fact, Wolf Creek turns out to be of greater economic value to ratepayers in the future, those future ratepayers will pay more of the costs associated with that value.

34. As noted in the September order, the starting point of our calculation was determination of the generation costs for KG&E and KCPL coal plants. As obtained from exhibit G-Staff-127, the generation costs include not only fuel expenses but also operational and maintenance expenses as reported on FERC Form 1 Reports. The same types of expenses for Wolf Creek were taken from KG&E's Application, Section B, Schedule 4 with the addition of the decommissioning costs found appropriate by the Commission elsewhere in the order. This resulted in total production related costs of $42,084,018. In order to properly match, this cost was divided by the kilowatt hour production estimate upon which the generation expenses were based. As supplied by KG&E to staff in a data request, this figure was 2,664 GWH.

35. The difference in per kwh costs for the coal facilities and Wolf Creek was then multiplied by the estimated annual Wolf Creek kilowatt hours of 6,064,986,000 based on a capacity factor of 61 percent and a 1,135 megawatt capacity as suggested in KG&E's brief. Since KG&E now claims a capacity of 1,128 MW for Wolf Creek, the 1,135 figure is conservative. The resulting generation cost savings on an annual basis were then translated into capital costs by applying an annual fixed charge rate of 22 percent based on the cost of capital, income tax effects, depreciation, property tax and insurance rates found appropriate for the companies.

36. We have reexamined the above method for calculating the generation cost savings in light of the various deficiencies alleged by the company and still find it reasonable, especially given the fact that future capital additions were not included in the Wolf Creek costs and that older vintage coal plants were included in determining the coal generation costs.

37. The Commission has also carefully considered the Application of Johnson County Joint Intervenors for Rehearing. That Application requests that the Commission reconsider its decision not to adopt certain performance

standards and incentives proposed by intervenor witnesses during the hearings. In our September order, we found that there was insufficient evidence to adopt such proposals at this time. Having heard arguments on this matter, the Commission remains of the opinion that while such standards and incentives deserve consideration, it would be best to do so after some results of actual operations of Wolf Creek are known. This application for rehearing is therefore denied.

38. The Commission, having re-examined our order issued September 27, 1985, in the above captioned dockets, and having considered the oral argument of counsel, finds no substantial error in its order, other than that denoted above. The Commission specifically reaffirms all findings of fact and conclusions of law set forth in our September 27, 1985 order referenced above, with the additions and modifications set forth herein. The Commission concludes that said order, as modified and supplemented herein, should be affirmed, and that the applications for rehearing should be denied.

IT IS, THEREFORE, BY THE COMMISSION ORDERED THAT:

The Applications for Rehearing filed by KCPL and by the Johnson County Joint Intervenors on October 7, 1985, in the above captioned dockets, are denied.

IT IS FURTHER ORDERED THAT:

The Commission's decision issued September 27, 1985 in the above captioned dockets is affirmed, as modified and supplemented herein.

Lennen, Chmn.; Wright, Com.; Henley, Com.

Dated: November 15, 1985

/s/ Judith McConnell
JUDITH MCCONNELL
Executive Secretary

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APPENDIX H

Order Denying Application for Rehearing (KCPL)

THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

Before Commissioners: Michael Lennen, Chairman;
Margalee Wright
Keith R. Henley

Docket No. 120,924-U

IN THE MATTER OF A GENERAL INVESTIGATION BY THE COMMISSION OF THE PROJECTED COSTS AND RELATED MATTERS OF THE WOLF CREEK NUCLEAR GENERATION FACILITY AT BURLINGTON, KANSAS

Docket No. 142,099-U
84-KCPE-198-R

IN THE MATTER OF THE APPLICATION OF KANSAS CITY POWER & LIGHT COMPANY REQUESTING PROPOSED CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

ORDER DENYING APPLICATION FOR REHEARING

Now, the application for rehearing filed by Kansas City Power and Light Company (KCPL) on November 22, 1985, comes on for consideration and determination by the State Corporation Commission (Commission). Upon examining the application and upon being otherwise duly informed and advised in the premises, the Commission finds and concludes as follows:

1. The final order was issued herein on September 27, 1985, pursuant to K.S.A. 66-117. That order was fully

responsive to KCPL's application for changes in its charges for electric service, filed November 8, 1984, and amended January 31, 1985.

2. The Commission received an application for rehearing from KCPL on October 7, 1985. The Commission also received on October 7, 1985, the application of the Johnson County Joint Intervenors for rehearing. Both applications were timely filed in accordance with K.S.A. 66-118(b).

3. By order issued October 17, 1985, the Commission required oral argument on certain issues with no time limit, and permitted oral argument on the remainder of the issues raised in the applications for rehearing subject to a twenty (20) minute time limitation. In that order, the Commission also continued the applications for rehearing for thirty (30) days from October 17, 1985, pursuant to K.S.A. 66-118(b).

4. The full Commission heard oral argument regarding the applications for rehearing on Friday, November 8, 1985, beginning at 8:30 a.m., in the Commission's Hearing Room B, Fourth Floor, State Office Building, as scheduled. Thereafter, on November 15, 1985, the Commission issued its Order Denying Rehearing, in which the Commission denied both the application for rehearing filed by KCPL, and the application for rehearing filed by the Johnson County Joint Intervenors. In that order, the Commission corrected several typographical errors contained in its September 27, 1985 order, ruled on certain procedural matters that remained open, and discussed several of the Applicants' arguments in detail explaining why the arguments were not persuasive and the applications were denied.

5. On November 22, 1985, KCPL filed with the Commission its verified application for rehearing of the Commission's Order Denying Rehearing, dated November 15, 1985. KCPL explained in its application that it applied

for rehearing of the Commission's November 15, 1985 Order Denying Rehearing because that "second" order supplements and modifies the September 27, 1985 order issued herein and KCPL wants to properly and adequately preserve its points for rehearing by the Commission and for judicial review. The application for rehearing filed November 22, 1985, contains the arguments made in KCPL's original application for rehearing directed toward the Commission's September 27, 1985 order with modification to reflect the Commission's November 15, 1985 order, as well as additional grounds directed toward the Commission's Order Denying Rehearing issued November 15, 1985.

6. The Commission has fully considered KCPL's application for rehearing, and has reviewed its orders issued September 27, 1985, and November 15, 1985, herein. The Commission finds no substantial error in its September 27, 1985 order, other than that noted in its November 15, 1985 order. The Commission finds no substantial error in its November 15, 1985 order. The Commission finds a typographical error in its order issued November 15, 1985, herein. At page 17, paragraph 34 of the order, reference is made to Section "B" of KG&E's application for a rate increase. Section "B" shall be changed to read Section "8".

The Commission specifically reaffirms all findings of fact and conclusions of law set forth in the September 27, 1985 order, with the additions and modifications set forth in the November 15, 1985 order. The Commission concludes that the September 27, 1985 order, as modified and supplemented in the November 15, 1985 order, should be affirmed, and that the application for rehearing should be denied.

IT IS, THEREFORE, BY THE COMMISSION ORDERED THAT:

The application for rehearing filed by KCPL on November 22, 1985, in the above-captioned dockets, is denied.

IT IS FURTHER ORDERED THAT:

The Commission's decision issued September 27, 1985 and modified and supplemented November 15, 1985, in the above-captioned dockets, is affirmed.

Lennen, Chmn.; Wright, Com., Henley, Com.

Dated: November 27, 1985

/s/ Judith McConnell
JUDITH MCCONNELL
Executive Secretary

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APPENDIX I

Notices of Appeal

IN THE SUPREME COURT
OF THE STATE OF KANSAS

No. 85-58914-AS

KANSAS GAS & ELECTRIC COMPANY,
Applicant/Appellant

v.

STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS,
Respondent/Appellee

NOTICE OF APPEAL TO THE UNITED STATES SUPREME COURT BY KANSAS GAS & ELECTRIC COMPANY

Applicant/Appellant Kansas Gas & Electric Company (KG&E) hereby appeals to the United States Supreme Court from the judgment of the Kansas Supreme Court in Case No. 85-58914-AS, issued June 13, 1986 (Rehearing denied July 17, 1986), affirming the orders of the Kansas Corporation Commission (KCC) issued September 27, 1985, and November 15, 1985, in Docket Nos. 120,924-4 and 142,098-U, 84-KG&E-197-R.

KG&E gives notice that it appeals from the entire judgment of the Kansas Supreme Court on the ground that the court upheld the validity of a Kansas statute, as that term has been interpreted under 28 U.S.C. § 1257(2) and its predecessors, under a challenge that the actions of the KCC are repugnant to the Constitution and laws of the

United States. KG&E's notice of appeal is taken pursuant to 28 U.S.C. § 1257(2).

Respectfully submitted,

/s/ James Haines
RALPH FOSTER
JAMES HAINES
Post Office Box 208
Wichita, Kansas 67201
(316) 261-6573

IN THE SUPREME COURT
OF THE STATE OF KANSAS

No. 85-58917-AS

KANSAS CITY POWER & LIGHT COMPANY,
Applicant/Appellant,
v.

STATE CORPORATION COMMISSION OF THE STATE OF KANSAS, MICHAEL LENNEN, Chairman, MARGALEE WRIGHT and KEITH R. HENLEY, Commissioners and their Respective Successors in Office as the Constituent Members of the State Corporation Commission of the State of Kansas,
Respondent/Appellee.

NOTICE OF APPEAL TO THE SUPREME COURT OF THE UNITED STATES

Notice is hereby given that Kansas City Power & Light Company, the Applicant above-named, hereby appeals to the Supreme Court of the United States from the final judgment of the Supreme Court of the State of Kansas, entered in this action on June 13, 1986.

This Appeal is taken pursuant to 28 U.S.C. Section 1257(2).

Dated: October 2, 1986

/s/ Warren B. Wood
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APPENDIX J

Excerpts from the Kansas Public Utility Act

Excerpts From The Kansas Public Utilities Act, K.S.A. §§ 66-101, *et seq.*

66-101. Electric public utilities; power, authority and jurisdiction of state corporation commission. The commission is given full power, authority and jurisdiction to supervise and control the electric public utilities, as defined in K.S.A. 66-101a, doing business in Kansas, and is empowered to do all things necessary and convenient for the exercise of such power, authority and jurisdiction.

66-101a. Same; definitions. As used in this act:

(a) "Electric public utility" means any public utility, as defined in K.S.A. 66-104, and amendments thereto, which generates or sells electricity.

(b) "Commission" means the state corporation commission.

66-101b. Same, services, facilities, rules, classifications, regulations, rates, tolls and charges. Every electric public utility governed by this act shall be required to furnish reasonably efficient and sufficient service, joint service and facilities for the use of any and all products or services rendered, furnished, supplied or produced by such electric public utility, to establish just and reasonable rates, joint rates, tolls, charges and exactions and to make just and reasonable rules, classifications and regulations. Every unjust or unreasonably discriminatory or unduly preferential rule, regulation, classification, rate, joint rate, toll, charge or exaction is prohibited and is unlawful and void. The commission shall have the power, after notice and hearing of the interested parties, to require all electric public utilities governed by this act to establish and maintain just and reasonable joint rates

when the same are reasonably necessary in order to maintain reasonably sufficient and efficient service from such electric public utilities.

66-128. Valuation of property for rate making purposes by commission; construction work in progress. The state corporation commission shall determine the reasonable value of all or whatever fraction or percentage of the property of any common carrier or public utility governed by the provisions of this act which property is used and required to be used in its services to the public within the state of Kansas, whenever the commission deems the ascertainment of such value necessary in order to enable the commission to fix fair and reasonable rates, joint rates, tolls and charges. In making such valuations the commission may avail itself of any reports, records or other things available to the commission in the office of any national, state or municipal officer or board. For the purposes of this act, property of any public utility which has not been completed and dedicated to commercial service shall not be deemed to be used and required to be used in the public utility's service to the public, except that, any property of a public utility, the construction of which will be commenced and completed in one year or less, may be deemed to be completed and dedicated to commercial service.

66-128a. Fixing rates, joint rates, tolls and averages; authority of commission not limited by 66-128b through 66-128i. Nothing in K.S.A. 66-128b to 66-128i, inclusive, shall be construed to limit the authority of the state corporation commission to review and evaluate the efficiency or prudence of any actions, including acquisition of excess capacity, or operating practices of any public utility or common carrier for the purpose of establishing fair and reasonable rates, joint rates, tolls and charges.

66-128b. Deferral and phase-in of value of certain utility property; exclusion of finance costs, when. The commission may require a public utility to defer inclu-

sion of all or any portion of the reasonable value of property determined not currently used and required to be used and may require the phase-in of such value over any period of time and in such increments as it determines to be appropriate. If the commission requires a public utility to defer the inclusion of any portion of such reasonable value and orders a phase-in of such value, it may exclude any or all of the carrying or finance costs incurred after the date of its determination and throughout the period of any deferral or phase-in as so ordered.

66-128c. Valuation of property for rate making; evaluation of efficiency or prudence of utility; exclusion of all or a portion of costs of excess capacity, when; "excess capacity" defined; exclusion or reduction of return on costs from excess capacity. The state corporation commission, in determining the reasonable value of property under K.S.A. 66-128, and amendments thereto, shall have the power to evaluate the efficiency or prudence of acquisition, construction or operating practices of that utility. In the event the state corporation commission determines that a portion of the costs of acquisition, construction or operation were incurred due in whole or in part to a lack of efficiency or prudence, or were incurred in the acquisition or construction of excess capacity, it shall have the power and authority to exclude all or a portion of those costs from the revenue requested by the utility.

For the purpose of this act, "excess capacity" means any capacity in excess of the amount used and required to be used to provide adequate and reliable service to the public within the state of Kansas as determined by the commission. The commission may in its discretion prohibit or reduce the return on costs which were incurred in constructing, maintaining or operating excess capacity.

66-128d. Same; commission may initiate proceedings for determination; procedure. The state corporation commission may at any time and in its sole discretion,

whether or not the facility is still under construction, initiate on its own motion a proceeding to determine in advance whether the costs of such facility were reasonably or prudently incurred, or whether all or a portion of the costs of such facility are or shall be incurred in producing excess capacity under K.S.A. 66-128c. The proceeding shall be commenced by the commission giving 30 days' written notice of the setting of the hearing of such proceeding to the public utility or utilities involved, and no other motion shall be required, but the procedure, hearing and appeal rights shall otherwise be as specified in K.S.A. 66-101 *et seq.* and amendments thereto.

66-128e. Adjustment of revenue requirements of utilities by commission; exclusion of finance charges attributable to inefficiency or lack of prudence; electric utility borrowing for payment of dividends; exeption for certain utility facilities. In the event the commission finds that a portion of the costs were attributable either to investment in excess capacity which were incurred due to lack of prudence in facility planning or were incurred due to lack of prudence in plant acquisition, construction or operation, the commission shall exclude that portion of the carrying or finance charges incurred after the date of its finding, and no part of the carrying or finance costs excluded shall ever be or become part of the reasonable value of public utility property so used and required to be used. For the purposes of this section only, a finding of lack of prudence in capacity planning for a facility which in whole or in part represents excess capacity shall not be made by the commission when a siting permit authorizing the construction of the facility has been issued under K.S.A. 66-1,162 and amendments thereto prior to the passage of this act. The commission also shall not authorize the recovery as operating expense or in any other manner of the carrying or finance costs so excluded.

Nothing in this act shall limit the commission's authority to adjust revenue requirements of any public

utility if the commission determines the revenue requirement requested results in whole or in part from inefficiency or a lack of prudence.

If the commission determines that a public utility, which generates and sells electricity as its main activity, has borrowed funds in order to pay dividends and such borrowing as the result of lack of prudence, increases the revenue requirement of the utility, the commission may adjust the revenue requirement accordingly.

66-128f. Monthly financial reports by certain utilities constructing electric generating facilities. Any public utility subject to the provisions of K.S.A. 66-128b to 66-128g, inclusive, which constructs an electric generating facility and was not required to obtain an advance permit under K.S.A. 66-1,159 *et seq.* shall make and send monthly financial reports to the state corporation commission. Such reports shall include the following information, as of the date of the report, the: (a) Actual costs incurred; (b) total estimated cost of the facility; (c) percentage of the facility which is actually completed; (d) estimated date of first commercial operation; (e) copies of informational filings provided federal agencies having regulatory authority over such construction; and (f) any other information required by the commission. Such reports shall be prepared and certified in the manner and form required by the commission. Nothing in this section shall limit the commission's authority to require filing of data in any format by any regulated utility the commission deems necessary to accomplish its regulatory duties.

66-128g. Determination of "prudence" in determining reasonable value of electric generating property; factors to be considered; presumption of lack of prudence of costs in excess of 200% of "original cost estimate"; definition of "original cost estimate"; when costs exceeding 200% may be included. (a) The factors which shall be considered by the commission in making the determination of "prudence" or lack thereof in determining the

reasonable value of electric generating property, as contemplated by this act shall include without limitation the following:

(1) A comparison of the existing rates of the utility with rates that would result if the entire cost of the facility were included in the rate base for that facility;

(2) a comparison of the rates of any other utility in the state which has no ownership interest in the facility under consideration with the rates that would result if the entire cost of the facility were included in the rate base;

(3) a comparison of the final cost of the facility under consideration to the final cost of other facilities constructed within a reasonable time before or after construction of the facility under consideration;

(4) a comparison of the original cost estimates made by the owners of the facility under consideration with the final cost of such facility;

(5) the ability of the owners of the facility under consideration to sell on the competitive wholesale or other market electrical power generated by such facility if the rates for such power were determined by inclusion of the entire cost of the facility in the rate base;

(6) a comparison of any overruns in the construction cost of the facility under consideration with any cost overruns of any other electric generating facility constructed within a reasonable time before or after construction of the facility under consideration;

(7) whether the utility having an ownership interest in the facility being considered has provided a method to ensure that the cost of any decommissioning, any waste disposal or any cost of clean-up of any incident in construction or operation of such facility is to be paid by the utility;

(8) inappropriate or poor management decisions in construction or operation of the facility being considered;

(9) whether inclusion of all or any part of the cost of construction of the facility under consideration, and the resulting rates of the utility therefrom, would have an adverse economic impact upon the people of Kansas;

(10) whether the utility acted in the general public interest in management decisions in the acquisition, construction or operation of the facility;

(11) whether the utility accepted risks in the construction of the facility which were inappropriate to the general public interest to Kansas;

(12) any other fact, factor or relationship which may indicate prudence or lack thereof as that term is commonly used.

(b) The portion of the cost of a plant or facility which exceeds 200% of the "original cost estimate" thereof shall be presumed to have been incurred due to a lack of prudence. The commission may include any or all of the portion of cost in excess of 200% of the "original cost estimate" if the commission finds by a preponderance of the evidence that such costs were prudently incurred. As used in this act "original cost estimate" means:

(1) For property of an electric utility which has been constructed without obtaining an advance permit under K.S.A. 66-1,159 *et seq.*, and amendments thereto, the "definitive estimate"; and

(2) for property of an electric utility which has been constructed after obtaining an advance permit under K.S.A. 66-1,159 *et seq.*, and amendments thereto, the cost estimate made by the utility in the process of obtaining the advance permit.

66-128h. Nuclear fission electric generating facilities with excess capacity; presumption certain costs excluded when finding of no "technology or means for disposal of high-level nuclear waste" as defined in section. (a) If any portion of an electric generating facility is determined to be excess capacity and if the facility is a nuclear fission power plant, the state corporation commission shall determine whether there has been approved by the United States government through its authorized agency, a proven technology or means for the disposal of high-level nuclear waste which is available for use at or by the plant.

If the commission finds that no such technology for disposal exists, it shall be presumed that the costs of acquisition, construction or operation of the facility were incurred due to a lack of prudence and the commission shall not include such costs in the reasonable value of the public utility property.

(b) When used in this section, "technology or means for the disposal of high-level nuclear waste" means temporary on-site storage of high-level nuclear waste or an approved process for the retrieval of such waste.

66-128i. Presumption of lack of prudence if fine for safety or quality violation assessed; reduction of revenue requirements. If a fine or penalty for a safety or quality assurance violation is assessed by the nuclear regulatory commission against a public utility governed by the provisions of this act, it shall be presumed that the act or omission of the public utility causing the assessment of the fine or penalty occurred due to a lack of prudence and the commission may reduce the revenue requirements accordingly.

66-128j. Electric utilities; certain power sales; sale or retirement of facilities; reduction in revenue requirement, when. When a public utility sells electric power to other than its retail customers or disposes of, sells or

retires from service any facility, the commission may evaluate the efficiency or prudence of such electric power sale or disposition, sale or retirement from service, and if it finds that any such action was inefficient or imprudent, or caused a reduction of electric power available to its retail customers or in electrical generating capacity, the commission may reduce the revenue requirement resulting therefrom.

66-128k. Severability. The provisions of this act are declared to be severable, and if any section, sentence, clause or phrase of this act shall for any reason be held to be invalid or unconstitutional, the validity or application of the other provisions of the act shall not be affected, it being the intent of the legislature that the act shall stand notwithstanding the invalidity of any part.

APPENDIX K

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Careful Checks

'PRUDENCY REVIEWS' ARE CHANGING THE WAY UTILITIES SET RATES

Regulators' Scrutiny Results In Big Cost Disallowances For Some Nuclear Plants

Penalties for Mismanagement

By FREDERICK ROSE
Staff Reporter of THE WALL STREET JOURNAL

SAN ONOFRE, Calif.—Several years ago, a workman dropped a ruler here. The result is still being measured.

As it happened, the steel yardstick slid into one of the reactor vessels of the San Onofre Nuclear Generating Station, then under construction.

The mishap, by one accounting, delayed the vast project by two days and cost about $1 million. Together with much bigger purported foul-ups, it may cost the plant's owners far more than that.

The California Public Utilities Commission soon will decide how much consumers should be charged for a nuclear facility whose $4.51 billion cost is more than 10 times the original estimate. An arm of the commission's staff has recommended that San Onofre's owners, Southern California Edison Co. and San Diego Gas & Electric Co., be disallowed inclusion of up to $1.77 billion of the plant's expense in determining their rate base, a step that would greatly reduce the profits from the plant.

Worn-Out Principle

Similar situations are taking place throughout the country. With nuclear plants costing many times original estimates and sometimes producing unneeded power, state utilities commissions are sweeping aside a once-undoubted principle that utilities should earn a profit on all the money invested in generating facilities. Increasingly, commissions are inspecting how money was spent on plants as well as the need for the plants' capacity. By one count, state commissions will investigate nearly two dozen nuclear-generating units in the next few years.

Regulators call the inspections "prudency reviews." Utilities call them something close to outrageous.

"It's a heads-you-win-tails-I-lose proposition," says Wallace Behnke, vice chairman of Commonwealth Edison Co., the big Chicago-based utility. The problem, says Mr. Behnke, is that "the public is upset with the rising costs for electricity; public-utilities commissions are therefore under enormous pressure to do something."

Regulators already have made some sharp cuts. New York disallowed $1.4 billion of the more than $4.7 billion cost of Long Island Lighting Co.'s Shoreham nuclear plant. Pennsylvania commissioners threw out $369 million of the $3.8 billion spent by Philadelphia Electric Co. on its Limerick 1 unit and delayed a rate ruling on a further $640 million. And Kansas currently has set rates for customers of Kansas Gas & Electric Co. and two other utilities as if the Wolf Creek plant cost only $569 million; its actual cost was $3.1 billion.

Profound Effects

The financial effects of such disallowance can be profound. After the regulators' decision on the Wolf Creek plant, for instance, financially strapped Kansas Gas & Electric chopped its dividend in half.

The states' new tightfistedness is another blow to the already-troubled business of building big power plants.

"No utility official today wants to start a project without knowing whether he'll be able to recover its cost five or 10 years from now," says William J. Catacosinos, the chairman, president and chief executive officer of Long Island Lighting.

Some analysts charge that this new aggressiveness by regulators is breaking an informal rule that governed the utilities industry for decades: In return for utilities' investing money in facilities to meet public need, regulators allowed the companies a reasonable return on those investments. State officials, however, say that such an understanding was never meant to excuse mismanagement.

In Missouri, a review of Union Electric Co.'s Callaway nuclear project unearthed internal notes quoting a senior company official's complaint, late in the project, that "we don't know where we are; we don't know how we're going to get this job done; we must find a way." On the strength of that and other evidence, the Missouri regulators disallowed $384 million of the plant's $2.98 billion cost.

Microscopic Investigations

Construction problems in the past were rarely investigated by regulators. Whether prudently or imprudently incurred, utilities' investments in nuclear plants and other big projects usually were passed on wholesale to consumers. At most, small adjustments were made during "general rate cases," which are periodic reviews by regulators of a utility's rates, investments and returns.

The so-called prudency reviews, although they can look at any type of facility, are the product of the enormous increases in the cost of nuclear facilities. "The industry wasn't policed carefully in the past and was accustomed to passing on its costs to the consumer," says Randall Speck, a Washington lawyer involved in a number of

such reviews. Now, regulators focus on a project in almost microscopic detail.

The staff of California's commission, for instance, holds that San Onofre's owners were to blame in the ruler incident because the worker who dropped the ruler was supposed to be using a special measuring device—not an ordinary yardstick. "We pay a lot for nuclear projects and we have a right to top-quality work," says Philip Scott Weismehl, an attorney with the commission.

Many utilities, while challenging a number of disallowances in court, seem to have accepted the near inevitability of reviews. Increasingly, however, agreements are being struck between regulators and utilities that exempt the utility from a review in return for an agreed-upon disallowance. Such a pact now covers part of Middle South Utilities Inc.'s River Bend nuclear plant in Louisiana. An agreement recenty capped consumers' liabilities for the Nine Mile Point facility in New York, which is being managed by Niagara Mohawk Power Corp. And regulators and Southern California Edison yesterday agreed to drop a planned review of the utility's 15.8%-owned Palo Verde nuclear facility in Arizona, instead making disallowances proportional to those ordered for the utility's San Onofre plant.

When reviews *are* undertaken, state commissioners generally set up a special staff division to pursue, much like prosecutors, the case against the utility; the commissioners act as the judge. Because of the reviews' complexity, outside consultants are hired to analyze the performance of the utility and its contractors.

This adversarial method, regulators say, is the only way to conduct a meaningful review. "If the staff bends over backwards to be fair, then the case is in trouble from the ratepayers' point of view," says William Ahern, the director of the Public Staff Division of the California Public Utilities Commission. Mr. Ahern heads the Cali-

fornia commission's staff advocacy group in the review of the San Onofre nuclear plant, a study that industry observers consider one of the most thorough and, some say, most aggressive to be undertaken of a nuclear facility.

San Onofre, by industry standards, isn't a lemon. Although it cost more than 10 times the original estimate, its final cost per kilowatt of capacity, a widely used benchmark, is relatively low. Mr. Ahern himself notes that "the commission must consider whether an average-looking nuclear project has costs reasonable to put onto the utilities' customers."

Thousands of Exhibits

Answering that question has cost the commission and utilities over $30 million to date. More than four years in the making, the case has accumulated hundreds of volumes of reports and briefs, 10,000 exhibits and some 20,000 pages of transcripts.

Mr. Ahern's staff hired O'Brien-Kreitzberg & Associates Inc., a consulting firm with offices in San Francisco and in Merchantville, N.J. For more than a year, O'Brien-Kreitzerg's people pored over some of the millions of documents related to the plant's design and construction and interviewed employees of both Edison and Bechtel Group Inc., the principal contractor. "The point is to stand in the other fellow's shoes," says James O'Brien, the chief executive officer of O'Brien-Kreitzberg.

Doing that was at times a difficult task. Personal notes from some important meetings couldn't be found. A computer terminal used to search records suffered so many breakdowns that employees at the consulting firm felt their work was being sabotaged.

Lawrence Hamlin, the head of Edison's task force on the review, calls the problems "trivial."

Company officials agree the commission has a duty to investigate spending at San Onofre. But they think that

things have gone too far. "The whole project verges on being ludicrous," complains Michael Peevey, the executive vice president of Edison in charge of the company's case.

Marked by Animosity

The hearings were marked by animosity; a commission staff attorney recalls almost coming to blows with one of the utility's counsel. As the research progressed, O'Brien-Kreitzberg issued reports detailing costs it believed were avoidable. The consultants initially concluded that $720 million of San Onofre's costs could have been avoided. Later, that was increased to $1.77 billion, a figure that could be reduced to $1.13 billion if the commission agrees with a complicated "risk sharing" formula, under which consumers and the company would split certain costs.

Mr. Hamlin maintains that O'Brien-Kreitzberg wrongly played down the effects of the 1979 nuclear accident at Three Mile Island and a major California earthquake on the time that it took the Nuclear Regulatory Commission to approve the San Onofre reactors. Indeed, acknowledging a major error, O'Brien-Kreitzberg retracted a recommendation that $293 million be disallowed when it was found that a delay attributed to construction was in fact due to licensing delays at the NRC. Otherwise, the consulting firm stands by its work.

The schedule calls for an administrative law judge to issue a proposed ruling on Oct. 10. A formal ruling by California's Public Utilities Commission is expected later this month.

Each side publicly professes that its position will prevail. But industry analysts generally expect a disallowance of between $200 million and $400 million. "If it's more than $400 million, I'd be surprised; if it's more than $500 million, some folks at Southern California Edison may be looking for a job," says one observer with a laugh.